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SPANGDAHLEM AIR BASE**

**SPANGDAHLEM AIR BASE
INSTRUCTION 15-101**



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Weather

WEATHER SUPPORT

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This instruction implements Air Force Policy Directive (AFPD) 15-1, *Atmospheric and Space Environmental Support*; AFI 15-114, *Functional Resource and Weather Technical Performance Evaluation*; AFI 15-127, *Air Force Weather Qualification Training*; AFI 15-128, *Air and Space Weather Operations Roles and Responsibilities*; Air Force Manual (AFMAN) 15-111, *Surface Weather Observations*; AFMAN 15-124, *Meteorological Codes*; AFMAN 15-129v1, *Air and Space Weather Operations Characterization*; AFMAN 15-129v2, *Air and Space Weather Operations – Exploitation*; and Federal Meteorological Handbook 1 (FCM-H1), *Surface Weather Observations and Reports* located at <http://www.ofcm.gov/fmh-1/fmh1.htm>. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFMAN 33-363, USAFESUP, *Management of Records*, and disposed of IAW *Air Force Records Disposition Schedule (RDS)* located at: <https://www.my.af.mil/afrims/afrims/afrims/rims.cfm>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF 847, *Recommendation for Change of Publication*; route AF 847s from the field through the appropriate functional chain of command.

This instruction, in conjunction with AFW publications and appropriate supplements, establishes requirements and responsibilities for organizations providing weather support to 52d Fighter Wing (52 FW) organizations. It provides policy and procedural guidance for the functions of weather support provided by the 52d Operations Support Squadron Weather Flight (52 OSS/OSW) and establishes responsibilities for other 52 FW organizations. It provides general information for weather services, including weather observations and forecasts, watches, warnings, and advisories, space weather supported services, dissemination of information, and

reciprocal support. It provides guidance for weather support while in garrison and deployed locations. It applies to all personnel assigned or attached to 52 FW, serves as a guide for its supported/supporting units, and outlines how the 52 FW will interact with the 21st Operational Weather Squadron (21 OWS).

SUMMARY OF CHANGES

This document has been substantially rewritten and must be completely reviewed. It updates the 52 OSS/OSW operating hours, consolidates controlled airfield operations and services support agreements, updates changes addressed with the release of the most recent AFMAN 15-111, and clarifies or corrects responsibilities and procedures for a combined unity of effort between Spangdahlem AB weather services and base agencies. All references were checked and outdated publication references deleted. All redundancies and information not pertinent to base organizations were removed. Policies and procedures inconsistent with current AFIs and AFMANs were removed. References to local policies and procedures updated to reflect current operating conditions. Note: For the purposes of this document, regarding airfield status, “controlled” refers to periods of time that the airfield is being controlled by an air traffic control tower and is designated as Class B, C or D airspace.

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1. General Information.

1.1. **Purpose.** The 52 OSS/OSW tailors and integrates weather information in support of the operations of the 52 FW and all associate units assigned to Spangdahlem AB, Germany. The Weather Flight provides and arranges for weather support to enhance the 52 FW mission and is the lead weather unit for all weather-related services and issues for Spangdahlem AB.

1.2. **Implementation.** This instruction establishes the responsibilities and procedures for areas of weather support that must be coordinated at the local level to meet mission needs. It consolidates weather support requirements and procedures for peacetime operations. Unless superseded by Emergency War Orders, this instruction is followed during wartime

operations. Coordination on this instruction constitutes acceptance in lieu of a Memorandum or Letter of Agreement unless one is required by AFI or AFMAN.

1.3. Concept of Operations. The 52 OSS/OSW works in partnership with the 21 OWS, Kapaun AS, Germany, IAW AFI 15-128, AFMAN 15-129v1, and AFMAN 15-129v2, to tailor operational and strategic level weather products for the operational user and integrate decision-grade information on weather and environmental impacts to military operations. 52 OSS/OSW leverages support from the 21 OWS for 24-hour forecasting services, meteorological watch (METWATCH), and resource protection services. Full aspects of support are documented in the Installation Data Plan (IDP) between the 21 OWS and the 52 OSS/OSW. Changes to this instruction affecting 21 OWS provided services will be coordinated between the two agencies.

1.4. Duty Priorities. The duty priorities for 52 OSS/OSW and the 21 OWS are outlined in [Attachment 2](#). The Duty Priorities table exists to match and balance manning and mission critical tasks. Duty priorities focus efforts during peak work periods prone to task saturation and prioritize conflicts. These duty priorities were developed IAW AFMAN 15-129v2. Weather personnel will use good judgment in complying with these duty priorities, especially where there is imminent danger to life and/or property.

1.5. Operating Hours, Locations, and Contact Information.

1.5.1. Staff Integration Function (SIF).

1.5.1.1. Operating Hours. 52 OSS/OSW staff personnel are available 0730-1630 Monday through Friday. The SIF is closed on U.S. federal holidays, USAFE family days, and 52 FW goal days.

1.5.1.2. Location. The SIF is located on the 3rd floor of Building 47 in rooms 316, 317, and 318. The training section and server room are located in room 501 of Building 47.

1.5.1.3. Contact Information. During operating hours, the Flight Commander can be reached at DSN 314-452-4704, the Wing Weather Officer DSN 314-452-6064, and the Flight Chief at DSN 314-452-4707. The training section can be reached at DSN 314-452-4703. Classified phone (VOSIP) and e-mail (SIPRNET) communication is available, but not continuously monitored. Contact the SIF through NIPR means prior to initiating classified communication.

1.5.2. Airfield Support Function (ASF).

1.5.2.1. Operating Hours. ASF forecasters are locally-certified weather personnel that will be physically present at an airfield weather services location suitable to augment (supplement/back-up) AMOSs installed at airfields IAW the requirements specified in **section 4.8** during controlled airfield hours which are prescribed in the Flight Information Publication (FLIP) Supplement for Europe under Spangdahlem AB, GM, unless Notices to Airmen (NOTAMs) dictate otherwise. Currently, duty hours are from 0600L-2200L Monday through Friday, 0800L-2000L on Saturday, and 1200L-2000L on Sundays.

1.5.2.2. Location. The ASF is located in Room 401, 4th floor of Building 47.

1.5.2.3. Contact Information. For general weather inquiries and flight weather briefings during duty hours, contact the ASF at DSN 314-452-6749, or via e-mail at 52oss.wx@us.af.mil. The local commercial prefix is 06565-61-XXXX where XXXX is the last four digits of the DSN phone number. Outside of operating hours contact the 21 OWS Spangdahlem Forecaster at DSN 314-489-2134, or the 21 OWS Flight Weather Briefing Cell at DSN 314-489-3233.

1.5.3. Mission Integration Function (MIF).

1.5.3.1. Operating Hours. The MIF will tailor operating hours to accommodate 52 FW flying windows. In general, the MIF forecaster arrives two hours prior to the first briefing time and is available until the termination of wing flying. The MIF is closed when local flights are not scheduled.

1.5.3.2. Location. When manning allows, an MIF briefer will be located at the 480 FS, room 1, Building 360. The MIF may also perform duties from Room 401, Building 47, once all 480 FS pilots have “stepped.”

1.5.3.3. Contact Information. While embedded with the 480 FS, the MIF briefer can be reached at DSN 314-452-2132. Reference paragraph 1.5.2.3. for contact information when the briefer is not with the 480 FS.

1.5.4. Alternate Operating Location (AOL). The 52 OSS/OSW (AOL) is located in Building 690, Room 1.11. When notified of any conditions which potentially threaten the personal safety of the occupants in Building 47, or would prohibit the use of the weather station (i.e., bomb threat, fire, chemical spill, surface winds steady at 65 knots or gusting to 75 knots, Building 47 communication outage, etc.), 52 OSS/OSW personnel will relocate operations to the AOL. While operating at the AOL, weather personnel can be reached at DSN 314-452-1478.

1.5.5. Standby Forecaster Program. Outside of controlled airfield hours, the 52 OSS/OSW has a certified forecaster on standby to respond to certain events. See section 3.2 for more details.

1.6. Weather Systems.

1.6.1. Primary Systems.

1.6.1.1. AN/FMQ-19. The AN/FMQ-19 is the automated meteorological observing system (AMOS) for Spangdahlem AB. It is an integrated system of multiple weather sensors and data automation components across the airfield that continually measure environmental conditions. These sensors and components provide responsive, reliable, accurate, real-time weather information in support of flight operations. The AMOS samples, measures, and reports: temperature, wind speed and direction, visibility, runway visual range (RVR), cloud base height and amount of coverage, pressure, liquid equivalent precipitation accumulation, and ice accretion during freezing precipitation.

1.6.1.1.1. **Table 1** lists the AMOS sensors and locations in association with the Spangdahlem AB runway. The Terminal Data Acquisition Unit (TDAU) and Moxa Ethernet switch are located in room 501 of Building 47.

Table 1. AMOS Sensors and Locations.

Primary Sensors (23 end of runway)	Secondary Sensors (05 end of runway)	Mid-Field Sensor (Midway of runway)	Valley Sensor (23 end off-base)
Wind Speed Lightning Rain Gauge Relative Temperature/Humidity Freezing Rain Barometers Ambient Light Visibility Precipitation Identification Ceilometer	Wind Speed Ceilometer Visibility	Visibility	Ceilometer

1.6.1.2. Joint Environmental Toolkit (JET). JET is the primary communication system used by USAF weather units. It uses centralized servers and desktop computers to transmit data to and receive data from weather agencies worldwide via the internet and dedicated communication links. JET is the Automate Dissemination System (ADS) use to send observations, forecasts, watches, warnings and advisories long-line.

1.6.1.3. Air Force Weather Web Service (AFW-WEBS). AFW-WEBS is an online portal maintained by the 557th Weather Wing that provides access to various weather products and tools (e.g. model data, satellite data, alphanumeric products, etc.). AFW-WEBS can be used as a back-up dissemination system in the event of a JET outage. Access is dependent on LAN availability.

1.6.1.4. Mark IVb. Mark IVB provides global, real-time meteorological satellite imagery that can be interrogated, enhanced and customized. It provides range, MOA and airfield overlays and greatly increases situational awareness. Mark IVB is dependent on LAN availability.

1.6.1.5. Weather RADAR. Spangdahlem AB has no indigenous weather RADAR capability. All RADAR data comes from AFW-WEBS and commercial websites.

1.6.1.6. Target Acquisition Weather System (TAWS). TAWS is used to generate tactical decision aides and provide solar and lunar information.

1.6.2. Deployable and Back-up systems.

1.6.2.1. AN/TMQ-53. The AN/TMQ-53 is a tactical/deployable AMOS with capabilities similar to the FMQ-19. It can be used as a back-up system in the event of an AMOS outage. UTC-postured (deployable) AN/TMQ-53s only back-up permanent observing systems at controlled airfields and are not used as, or replace, the permanent airfield observing system..

1.6.2.2. Laser Ranger Finder. Laser range finders are used to build visibility charts for in-garrison and deployed operations. It can also be used as a back-up method to estimate cloud base heights.

1.6.2.3. Kestrel 4500. The Kestrel is a hand-held weather sensor that can be used to measure various weather parameters in the event of an AMOS outage.

1.6.2.4. Other MAJCOM-approved device

1.7. Assumptions, Shortfalls, and Limitations.

1.7.1. 52 OSS/OSW Assumptions.

1.7.1.1. Weather communications networks will function continually and without interruption to provide sufficient data for continuity of weather operations during peacetime. Loss of communication will cause significant degradation of quantity and quality of weather services.

1.7.1.2. Optimum forecast and observing support is dependent on fully operational meteorological sensing equipment.

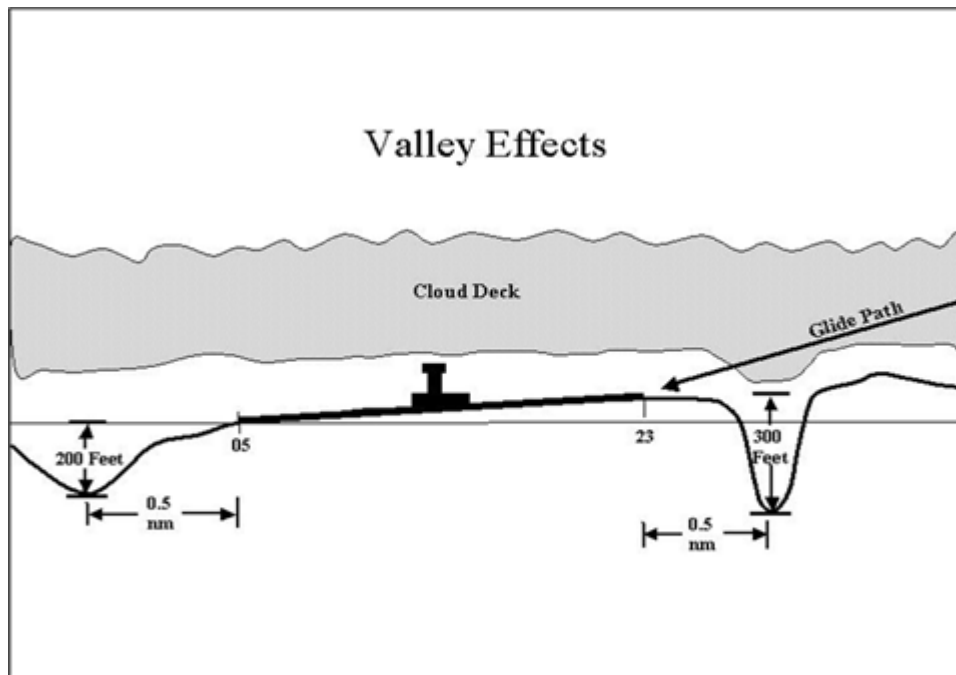
1.7.1.3. Weather support can only be provided if the appropriate facilities, funding, personnel, and indigenous support (e.g., power, water, etc.) are available.

1.7.1.4. Optimum support is dependent on proper feedback from and coordination with supported units.

1.7.2. 52 OSS/OSW Shortfalls. Some services may be degraded or may be unavailable (e.g., flight weather briefings) due to manning, station evacuation, or other higher priority missions

1.7.3. 52 OSS/OSW Limitations.

1.7.3.1. Due to the valley on the approach end of Runway 23, cloud bases at the pilot's decision point are often lower than those measured by the ceilometer located near the landing threshold. Therefore, a ceilometer has been placed in the valley to measure cloud bases. This becomes critical when cloud bases are less than 1,000 feet above ground level (AGL) as the lower clouds may interfere with pilots visually acquiring the runway. When the AMOS is being augmented, the observer may append remarks to the surface observation to indicate this condition, e.g. CIG004 APCH RWY23. See [Figure 1](#) for more information.

Figure 1. Valley Effect on Ceilings.

1.7.3.2. The AN/FMQ-19 has a documented deficiency to indicate false precipitation reports. Investigations have proven that birds, bugs, dust and spider webs cause most false reports. During such events, the forecaster will correct any erroneous observations and contact 52 OSS/OSACA to inspect, clean, and troubleshoot sensor.

1.7.3.3. The 7-story tower in the middle of Building 47 may hinder hand-held sensor wind readings and visibility measurements from the 4th floor observing point; therefore, the observer will observe elements from all sides of the rooftop as needed.

1.7.3.4. The AN/TMQ-53 has known limitations on the extended heights of AN/TMQ-53 visibility and wind sensors prevent full compliance with FCMS4-1994 sensor siting standards. When using the AN/TMQ-53 as a backup system during controlled airfield hours, weather personnel will report wind speeds as estimated.

1.7.3.5. The Flight Information Publication (FLIP) section for Spangdahlem AB requires the Runway Visual Range (RVR) to be reported by the AMOS at 370m. The AMOS will only allow RVR intervals of 50 meter increments up to 800 meters. The 52 OSS/OSW has installed 350 meters and 400 meters as reporting increments, as they are the closest values to the required threshold.

1.7.3.6. If the TDAU is inoperable, AN/FMQ-19 data will not be accessible. Therefore, official observations will be performed using back-up procedures with available weather equipment listed in section 1.6.2.

1.7.3.7. If the JET server in Building 212 is inoperable, FMQ-19 data will be available; however it will not automatically disseminate longline. In this case, official observations will be sent using back-up communication procedures.

1.7.3.8. Due to false reports of freezing precipitation, deficiency reports exists on the AN/FMQ-19 freezing precipitation sensors. Until these deficiencies are corrected,

weather personnel will mitigate the risk of false freezing precipitation outside of controlled airfield hours, when the temperature is, or is forecast to be between 0 and 3 degrees Celsius (accounting for evaporative cooling) and collaboration with the supporting OWS has determined that the risk of FZRA is acceptably low.

1.8. Release of Weather Information to Non-DoD Agencies and Individuals. 52 OSS/OSW does not provide weather support or information to non-DoD organizations or to the general public except as authorized by AFI, Joint Ethics Regulation (5500.7-R) or the 52 FW/CC (or designated representative). In addition, 52 OSS/OSW personnel will not release weather data to outside agencies unless coordinated through 52 FW Public Affairs (PA) and 52 FW Staff Judge Advocate (JA) legal offices, 52 OSS/CC, and the 52 OG/CC.

2. Mission Information.

2.1. General. This chapter identifies local weapons systems, the most common missions and operating areas, and weather sensitivities associated with the organization, weapons systems, missions, and aircrews.

2.2. Supported Unit/Missions/Requirements. 52 OSS/OSW provides weather support to the 52 FW with accompanying mission and requirements:

Table 2. Spangdahlem AB Organization & Mission Description.

	Mission	Pillars
52 FW	Fueling forward ready now with airpower options.	Mission, Airmen, and Community

2.3. Geographic Area of Responsibility. The 52 OSS/OSW provides mission-tailored weather support for flying training areas used by units assigned or attached, i.e. Theater Support Packages (TSPs), to the 52 FW. These areas are outlined in the local area maps included in [Attachment 7](#).

2.4. 52 FW Flying Mission Weather Limitations. The 52 OSS/OSW will coordinate weather limitations to flying missions with 52 Operations Group Standardization and Evaluation (52 OG/OGV) at least once per year. The current list is in [Attachment 4](#). These limitations will then be used to create mission execution forecasts (MEFs) for local flyers. General weather limitations are listed below.

2.4.1. USAF General Weather Limitations. The following tables provide general, non-airframe dependent weather limitations.

Table 3. USAF General Weather Limitations.

Weather Condition	Impact	Customer Action
Ceiling < 2,000ft and/or Visibility < 3sm	IFR Alternate required	Add fuel to allow divert

2.4.2. Pilot Weather Categories (PWC). PWCs are designed to reduce the exposure of pilots with limited experience to the risks inherent during periods of low ceiling and visibility. [Table 4](#) below lists PWCs for F-16 pilots at Spangdahlem AB.

Table 4. Pilot Weather Categories (PWC) for F-16s.

Pilot Category	Weather Criteria (ceiling in feet / visibility in meters)
A	Airfield Published Minima
B	$\geq 300 / 1600$
C	$\geq 500 / 2400$
D	$\geq 700 / 3200$
E	$\geq 1,500 / 5000$

2.4.3. Event Limitations for F-16s. The following table provides a summary of weather minimums for F-16 aircraft associated with Spangdahlem AB mission:

Table 5. Event Weather Limitations.

Event	Minimum
Formation Takeoff	Standing water, ice, slush or snow is on the runway. The crosswind or gust component exceeds 15 knots
Formation landing	The crosswind or gust component exceeds 15 knots. The runway is wet or reported wet. Ice, slush, or snow on the runway. 500 ft / 1.5 SM (or a flight member's weather category, whichever is higher)
VFR Rejoin	Day – 1,500 ft / 2 sm (cig/vis) Night – 3,000 ft / 5 sm (cig/vis)

2.5. **Spangdahlem AB Non-Flying Mission Weather Limitations.** Aside from the flying squadrons, there are many agencies on-base that require weather services. The 52 OSS/OSW has coordinated weather limitations and actions taken (either for precaution or protection) by other base agencies. The latest product is in **Attachment 4**.

3. Staff Weather Element.

3.1. Roles and Responsibilities.

3.1.1. The 52 OSS/OSW Flight Commander (Flt/CC) ensures overall operational capability of the flight by providing intent, direction, and resources in alignment with 52 FW priorities. The Flt/CC is responsible for the conduct and direction of the 52 OSS/OSW.

3.1.2. The 52 OSS/OSW Wing Weather Officer (WVO) exploits and makes weather a force multiplier by providing liaison and briefing services to all 52 FW agencies.

3.1.3. The 52 OSS/OSW Flight Chief provides technical leadership and oversees daily weather operations in support of base and flying operations. The Flight Chief adapts resources to mission requirements and manages weather services and equipment. Lastly, this individual is responsible for all training and readiness activities and the technical health of the flight.

3.2. **Standby Forecaster.** Outside of controlled airfield hours, the 21 OWS provides METWATCH and resource protection services for Spangdahlem AB. 52 OSS/OSW maintains a standby forecaster to be recalled for duty under circumstances outlined as standby criteria under **Table 6**.

3.2.1. A certified forecaster will be on standby to provide expanded “eyes forward” capability, augment observing equipment when malfunctioning, during inclement weather, or providing 52 FW mission related weather services outside of the normal controlled airfield hours.

3.2.2. The standby forecaster is responsible to respond to all calls from the 21 OWS and the Spangdahlem Command Post (SCP). Any other agency requesting weather assistance must be patched through the SCP. When called, the forecaster on standby will determine the appropriate response to the request, as required. The following circumstances will be used as general guidance for reasons to recall the standby forecaster:

3.2.2.1. 21 OWS notifies standby forecaster of a pending or issued weather watch or warning.

3.2.2.2. Support is required for an exercise, alert, in-flight emergency, or any other contingency.

3.2.2.3. When a toxic corridor is required for HAZMAT response. The standby forecaster will remain on-duty until notified by SCP or 52 Civil Engineering Squadron Emergency Management (52 CES/CEX) that threat is over.

3.2.2.4. 21 OWS is experiencing problems with JET, the AMOS, or are otherwise unable to see local weather information.

3.2.2.5. Any operation 52 OG/CC determines to require weather support.

3.2.2.6. Any time criteria in **Table 6** have occurred or is forecasted to occur.

3.2.3. When notified, standby forecasters contact the 21 OWS for a discussion of the situation immediately. If unable to resolve the issue (e.g. pending weather, equipment outage, etc.) via phone, the standby forecaster will report to the weather station as soon as safely possible to assess local conditions or to augment the AMOS IAW AFMAN 15-111 and local procedures.

3.2.4. Upon arrival, the forecaster will call the SCP and 21 OWS to reclaim responsibility and then begin their weather duties. Upon closure, the forecaster will notify those agencies to inform them of a transfer of responsibility.

3.2.5. If weather criteria listed in the **Table 6** is valid at the scheduled time of office closure, ASF will remain open until the weather threat has passed

3.2.6. In the event of a 21 OWS communication outage or Continuity of Operations (COOP), standby personnel will report in to assume terminal aerodrome forecasts (TAF) and weather watches, warning, and advisory support. Standby forecaster will alert the Severe Weather Action Team (SWAT) forecaster about the outage and expected fix time to determine the course of action.

3.3. Severe Weather Action Plan (SWAP). The SWAP ensures sufficient personnel are available during potential or actual severe weather events. Employing Risk Management (RM) techniques is crucial to a successful SWAP to ensure safety of base personnel and wing assets. The 52 OSS/OSW is responsible for conducting periodic exercises to test the SWAP.

3.3.1. Upon the first indication of the following criteria, the 52 OSS/OSW member on shift or standby will contact the Severe Weather Action Team (SWAT) member to alert them to the possibility of needing assistance:

3.3.1.1. A weather watch or warning for any criteria in the SWAT column **Table 6** is issued, if the criteria is occurring, or if the criteria has occurred.

3.3.1.2. Upstream station(s) within 100nm are reporting severe weather.

3.3.2. If the SWAT forecaster determines it is necessary, SWAP will be implemented and SWAT personnel will immediately report to the weather station. A 52 OSS/OSW flight weather recall will be directed for more personnel as the situation warrants.

3.3.3. See **Chapter 6**, Resource Protection, for more information about weather warnings.

Table 6. Standby and SWAT Matrix.

CRITERIA	STANDBY	SWAT
Volcanic Ash	X	
Tornadoes	X	X
Severe Thunderstorms Hail $\geq \frac{3}{4}$ inch & Winds > 50 kts (to include gusts)	X	X
Non-convective Winds ≥ 50 kts (to include gusts)	X	X
Moderate Thunderstorms Hail $\geq \frac{1}{4}$ inch but $< \frac{3}{4}$ inch & Winds 35 – 49 kts (to include gusts)	*	
Heavy Snow ≥ 2 inches in 12 hours	**	
*Only if hail is forecast. **Standby forecaster may be recalled towards the end of the valid period by the 21 OWS to verify issued heavy snow warnings.		

3.4. **Operational Reports.** IAW AFI 10-206, *Operational Reporting*, 52 OSS/OSW will provide the SCP with weather information needed to report impacts of weather to higher headquarters.

3.4.1. 52 OSS/OSW will contact the SCP immediately if any of the criteria in **Table 7** are met:

Table 7. Severe Weather Reporting Criteria.

Tornado
Severe Thunderstorms (hail $\geq \frac{3}{4}$ inch & winds ≥ 50 knots (to include gusts))
Non-convective winds ≥ 50 knots (to include gusts)
Any damage or injury caused by weather phenomena

3.4.2. At the conclusion of the severe weather event, 52 OSS/OSW will review and summarize the severe weather, then forward information to the 52 OSS/CC, SCP, and 21 OWS within 24 hours of the occurrence. 52 OSS/OSW leadership will provide or arrange delivery of hard copies of relevant forecasts, observations, watches, warnings, and equipment status to the SCP to be included in an OPREP-3. If an OPREP-3 is generated, the information will also be provided to USAFE A3/A3CW

3.5. Emergency Management. Any emergency may be of varying duration and onset time, so the level of weather support required for each situation will be dictated by appropriate 52 FW and Emergency Management (EM) leadership. The following section outlines specific duties and responsibilities related to 52 OSS/OSW EM support. The 52 OSS/OSW supports the 52 FW with the following crisis response actions:

3.5.1. Coordinates with 21 OWS to support EM operations requirements.

3.5.2. Assists the Installation Commander and EM personnel in educating installation agencies on the purpose, applicability, and operating procedures of the watch and warning system and types of severe weather threats to the local area.

3.5.3. Provides severe weather guidance for developing the base Comprehensive Emergency Management Plan.

3.5.4. Provides weather data upon request to the Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Control Center and to on-scene emergency personnel responding to a major accident. The 52 OSS/OSW will provide any and all weather information requested for EM such as current wind speed and direction, temperature, relative humidity etc.

3.5.5. Develops Effective Downwind Messages and Chemical Downwind Messages (EDM/CDM). These are normally requested during FPCON Charlie or greater.

3.5.6. Performs formal reviews of severe weather events.

3.5.7. Provides weather observations and forecasts to support response operations.

3.5.8. Advises 52 FW/CC or representative on severe weather response actions to include participation in annual preparedness meetings and exercises.

3.6. Aircraft Mishap. In the event of an aircraft mishap, the 52 OSS/OSW will:

3.6.1. Provide an immediate update to the Supervisor of Flying (SOF) and TOP 3.

3.6.2. Request 21 OWS complete a data save from 12 hours prior through 6 hours after the event.

3.6.3. Perform a local data save using JET for the same times as 3.6.2.

3.6.4. Provide the following saved data to lead mishap investigators:

3.6.4.1. Satellite, radar (if available), hazard charts and any other products used to produce the mission weather brief.

3.6.4.2. TAF, observations, MEF, 175-1, Verbal Brief Log, PMSV log, watches, warnings, and advisories, Pilot Report (PIREPs), Aircraft Reports (AIREPs), significant meteorological information (SIGMETs), and any other pertinent weather data.

3.6.4.3. A detailed statement concerning weather information briefed to the aircrew.

3.6.4.4. Provide the SCP weather conditions at time and place of aircraft mishap or incident.

3.7. Air Traffic Control (ATC) Limited Observation Training. The 52 OSS/OSW maintains and instructs ATC personnel in a Limited Observation Training program. Weather personnel task-certify ATC personnel to evaluate prevailing visibility values from the control tower. If required, weather personnel will also ensure ATC personnel can operate the applicable weather equipment in ATC facilities. Log ATC task certification on ATC provided AF Form 3622, Air Traffic Control/Weather Certification and Rating Record. This training is designed to enable the Cooperative Weather Watch program and provide better “eyes forward” capability for the 21 OWS. See [section 9.2.3.6.2](#) for more information

3.8. Flight Information Publications (FLIPs) Updates. The 52 OSS/OSW is responsible for ensuring all weather information in the FLIPs (e.g. operating hours and equipment limitations) is current and accurate. The 52 OSS/OSW will review new FLIPs within 3 days of receipt for changes to weather information, airfield take-off, landing, radar instrument approach minima, NOTAMs, and other key items which may drive changes to weather support. The 52 OSS/OSW will incorporate any changes to the FLIPs into procedures as soon as possible. As applicable, the weather flight chief or designee will route any updates regarding weather support to Airfield Management (52 OSS/OSAM) for processing.

3.9. Additional Staff Weather Support. The 52 OSS/OSW staff will also provide following weather support upon request:

3.9.1. Instrument Refresher Course (IRC). 52 OSS/OSW will provide a forecaster to present the weather portion of the IRC. The 52 OSS/OSW will provide refresher training for assigned pilots on METAR code, TAF code, MEF products, space weather, and other topics as arranged by the 52 OSS/OSW and 52d Operations Group Standardization and Evaluation (OG/OGV) office.

3.9.2. Mobility Concept Briefing. The 52 OSS/OSW will provide pre-deployment planning weather information at Mobility Concept Briefings. If required, this briefing may be presented as a weather annex to a TASKORD or OPORD IAW JP 3-59. The briefing will include forecasted departure conditions, en route weather, forecast conditions for destination arrival time, deployed area climatological conditions, and other topics briefed as required.

3.9.3. Quarterly safety meetings and SOF Meetings. 52 OSS/OSW will provide seasonal weather briefings at quarterly safety and SOF meetings when requested by the 52 FW Safety Office (52 FW/SE) or 52 OG/OGV.

3.9.4. Extended Weather Outlook. The 21 OWS produces a 5 Day planning weather slide for Spangdahlem AB on their webpage each day no later than 0000Z and updates it as required. This product contains text and graphics for a plain language weather forecast for general population consumption. See **Attachment 8**.

3.9.4.1. Spangdahlem AB 7-Day Outlook. The 52 OSS/OSW tailors the 21 OWS Extended Weather Outlook for Spangdahlem AB. The Spangdahlem AB 7-Day Outlook provides the same general weather elements plus an added stop-light chart that highlights weather that may impact 52 FW operations. Other areas of interest may be added as needed. See **Attachment 8**.

3.9.5. Staff Briefings and Studies. 52 OSS/OSW provides climatology briefings, weather studies, or weather reviews when requested through the chain of command.

3.9.6. 52 OSS/OSW Flight Commander, Flight Chief, or other representative will attend all Airfield Operations Board Meetings.

3.9.7. Solar/Lunar Data. 52 OSS/OSW can provide detailed solar and lunar data. Data includes sunrise, sunset, moonrise, moonset, civil twilight, nautical twilight, lunar illumination, moon phases, solar and lunar angles, and millilux (measurement of illumination) for any location world-wide.

3.9.8. Space Weather. 52 OSS/OSW will brief space weather events when impacts are forecast to degrade communications and operations.

3.9.9. Tropical Weather Updates. 52 OSS/OSW will provide briefings to the wing leadership when a tropical system is expected to impact any 52 FW operation world-wide. The 52 OSS/OSW will work with the 21 OWS which serves as the primary liaison between the tropical cyclone forecast centers and 52 OSS/OSW. 52 OSS/OSW will use the Tropical Cyclone Tropical Assessment Product (TC-TAP) produced by the 21 OWS or tropical cyclone forecasts issued by other designated tropical cyclone centers outside of the 21 OWS AOR (National Hurricane Center, Central Pacific Hurricane Center, or Joint Typhoon Warning Center). 52 OSS/OSW will not deviate from the official forecast position, track, movement, maximum wind speed, or intensity trend.

3.9.10. Volcanic Events. 52 OSS/OSW will provide briefings to wing leadership when volcanic ash could affect operations.

4. Airfield Support Function (ASF).

4.1. **General.** The ASF provides support to the SOF, ATC, 21 OWS forecast and resource protection mission, staff weather services, and PMSV contacts. ASF will also supplement and/or back up automated observations from the AMOS that could adversely impact flight/ground operations, based on documented supported unit requirements.

4.2. **Meteorological Watch.** METWATCH is used to provide an organized approach for weather personnel to maintain situational awareness of both current and future meteorological situations. The 21 OWS will utilize RM to establish and maintain a prioritized threat based METWATCH process for the 52 OSS/OSW, meanwhile the 52 OSS/OSW provides “eyes forward” support. Changes in the status of weather elements result in notification from 52 OSS/OSW or 21 OWS to base agencies.

4.3. Continuous Weather Watch. The 52 OSS/OSW is considered an automated weather flight because the observing system performs an automatic Continuous Weather Watch. When augmenting the AMOS is required, weather personnel will perform a Basic Weather Watch.

4.4. Basic Weather Watch. The Basic Weather Watch (BWW) will be conducted during periods when the airfield is controlled and during periods when any of the mandatory AMOS augmentation criteria is occurring. During a BWW, weather technicians will check weather conditions, at intervals not to exceed 20 minutes to determine the need for a SPECI observation when any of the conditions listed in 4.7.3. are observed or are forecast to occur within 1 hour.

4.5. Cooperative Weather Watch. Cooperative Weather Watch (CWW) is the process whereby ATC personnel, flying units, and Security Forces personnel report observed weather conditions to the 52 OSS/OSW. The 52 OSS/OSW will reevaluate weather conditions when information reported from a reliable source differs from the last disseminated observation. The 52 OSS/OSW may include the conditions in the next observation or as a new observation. See [Chapter 9](#), Reciprocal Support, for more information.

4.6. Official Observation Points/Sites.

4.6.1. While disseminating automated observations, the official point of observation is the sensor suite at the end of the active runway.

4.6.2. When augmenting observations, the official point of observation is the fourth floor rooftop of Building 47 (accessible from room 401).

4.6.3. While at the AOL, the active airfield sensor suite remains the official point of observation if the AMOS & TDAU are operational and automated observations are being disseminated. If the airfield sensors are inoperative while personnel are operating at the AOL, the official point of observation is on the north side of Building 690.

4.7. Types of Observations.

4.7.1. The 52 OSS/OSW provides observing services 24-hours a day using the AMOS. The AMOS, in conjunction with JET, will disseminate all observations automatically.

4.7.2. METAR are routine weather observations taken and disseminated every hour between 55 and 59 minutes after the hour. METAR observations can include SPECI criteria. METAR observations are disseminated both locally and long-line. Refer to [Attachment 6](#), Weather Observation and Forecast Code Formats, for help decoding weather observation and forecast products.

4.7.3. A SPECI is an unscheduled observation completed and transmitted when any of the special criteria listed below for automated (including when augmenting) and manual weather flights have been observed or sensed. SPECI will contain all data elements found in a METAR plus additional remarks that elaborates on data in the body of the report. All SPECI reports will be prepared and transmitted as soon as possible after the relevant criteria are observed. Special criteria will be recorded and disseminated IAW AFMAN 15-111. All SPECI criteria are listed below:

4.7.3.1. **VISIBILITY.** Prevailing visibility decreases to less than or, if below, increases to equal or exceed value in **Table 8**.

Table 8. SPECI Criteria for Visibility in Meters

5000	4400	4000	3600	3200	2800
2400	2000	1600	1200	800	400

4.7.3.2. CEILING. When the observed ceiling forms or dissipates below, decreases to less than, or if below, increases to equal or exceed value in **Table 9**.

Table 9. SPECI Criteria for Ceiling in Feet

8000	5000	4000	3000	2000	1500	1000
900	800	700	600	500	300	200

4.7.3.3. Sky Condition. A layer of clouds or obscuring phenomena aloft is observed below 1500 feet and no layer aloft was reported below this height in the previous METAR or SPECI.

4.7.3.4. Wind Shifts. Any wind direction change by 45 degrees or more in less than 15 minutes and the wind speed 10 knots or more throughout the wind shift.

4.7.3.5. Squall. A strong wind characterized by sudden onset in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute. A special observation is not required to report a squall if one is currently in progress.

4.7.3.6. Volcanic eruption or volcanic ash cloud is first observed.

4.7.3.7. Thunderstorm (occurring at the station) begins or ends. A thunderstorm has begun and is occurring at the station when (1) thunder is first heard, (2) when hail is falling or lightning is observed at or near the airfield and the local noise level is such that resulting thunder cannot be heard, or (3) lightning detection equipment indicates lightning strikes within 5 nautical miles of the airfield. A thunderstorm is considered to have ended 15 minutes after the last occurrence of any of these criteria.

4.7.3.8. Precipitation:

4.7.3.8.1. Hail begins or ends.

4.7.3.8.2. Freezing precipitation and/or ice pellets begin, end or change intensity.

4.7.3.8.3. Any other type of precipitation begins or ends.

4.7.3.9. Tornado or funnel cloud is observed, disappears from sight, or ends.

4.7.3.10. Runway Visual Range (RVR). RVR for active runway decreases to less than or, if below, increases to equal or exceed criteria in **Table 10**

Table 10. SPECI Criteria for RVR in Meters.

P1500	1500	1200	800	750	600	400	350
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4.7.3.10.1. Report RVR when Prevailing visibility is first observed \leq 1SM or RVR \leq P1500 meters. Also transmit when prevailing visibility initially goes above 1SM or RVR above P1500 meters.

4.7.3.10.2. Transmit RVR when it is first determined as unavailable (RVRNO) for runway in use, and when it is first determined that the RVRNO report is no longer applicable, provided conditions for RVR exist.

4.7.3.11. Transmit Tower Visibility as a remark when:

4.7.3.11.1. When notified by the control tower that tower visibility has decreased to less than or, if below, increased to equal or exceed 1, 2, or 3 statute miles, 1600, 3200 or 5000 meters (IAW FAA JO 7110.65V, Air Traffic Control) and the control tower visibility differs from the prevailing visibility.

4.7.3.11.2. When notified by the control tower that tower visibility has decreased to less than or, if below, increased to equal or exceed locally developed tower special criteria (if applicable) and the control tower visibility differs from the prevailing visibility.

4.7.3.12. Within 15-minutes after the weather technician returns to duty following a break in observing coverage or augmentation at the observing location unless a record observation is filed during that 15-minute period.

4.7.3.13. Aircraft Mishap. If in back-up mode, take an aircraft mishap SPECI immediately following notification or sighting of an aircraft mishap at or near the observing location unless there has been an intervening observation. The forecaster will not disseminate the remark ACFT MISHAP longline or locally, but will annotate on local forms.

4.7.3.14. Any other meteorological situation that, in the forecaster's opinion, is critical.

4.8. Augmentation. Augmentation is the process of having position-qualified weather technicians manually add to or edit data in an observation generated by a properly sited AMOS. The two augmentation processes used are *supplementing* and *back-up*. 4.8.1. Supplementing. Supplementing is a method of manually adding meteorological information to an automated observation that is beyond the capabilities of the AMOS to detect and/or report. Weather personnel are required to have a view of the airfield complex when supplementing an AMOS. Weather personnel will perform a BWW and be prepared to supplement observations during controlled airfield hours when the weather conditions in Table 11 are observed and/or forecast to occur within 1 hour. Weather personnel are required to be prepared to supplement observations whenever a tornado watch is valid or warning has been issued for tornadic activity. Weather personnel are not required to supplement observations outside controlled airfield hours for other Table 11 criteria.

Table 11. Mandatory Supplementary Weather Conditions.

Tornado (+FC)
Funnel Cloud (FC)
Waterspout (+FC)
Hail (GR)
Volcanic Ash (VA)
Ice Pellets (PL)
Visibility (VIS) < ¼ mile (400 meters)
Snow Depth
Tower VIS (When surface prevailing VIS or tower VIS is < 4 miles (6000 meters) and the tower VIS differs from surface VIS by a reportable value)

Table 12. Mandatory Supplementary Weather Conditions During Wing Flying.

Ceilings form below 2000 feet.
Visibility decreases to less than 3 miles (5000 meters).
Thunderstorms (occurring and not reported or reported and not occurring)
Precipitation (type occurring is different than reported, precipitation is occurring and not reported, or precipitation is reported but not occurring)***
***Forecasters will augment precipitation type during controlled airfield hours.

4.8.1.1. **Augmentation Responsibilities.** To perform augmentation duties, the weather technician must maintain situational awareness of current weather conditions and AMOS observations. The 52 OSS/OSW has developed RM based augmentation procedures based on [Table 11](#) and [12](#) which are document in flight Standard Operating Procedures (SOPs). Clearly defined duty priorities that include augmentation are listed in [Attachment 2](#).

4.8.2. **Back-up of an AMOS.** Back-up is the method of manually providing meteorological data to and/or dissemination an AMOS observation when the primary automated method is not operational or unavailable due to sensor and/or communication failure. Except for some automated remarks, back-up provides the same reporting capability provided by a fully functioning AMOS.

4.8.2.1. Wind and pressure values from any piece of back-up equipment (e.g., AN/TMQ-53, hand-held devices or other MAJCOM-approved deployable meteorological equipment).

4.9. **Local Criteria.** A LOCAL is an unscheduled observation reported to the nearest minute, not meeting SPECI criteria. 52 OSS/OSW will only take single element LOCALs for altimeter setting change of 0.01 inch Hg or more during back-up of the AMOS pressure sensor at an interval not to exceed 35 minutes since last observation.

4.10. **Pilot-to-Metro-Service (PMSV) and PIREPs.** 52 OSS/OSW provides pertinent weather data to all aircraft operating within Spangdahlem AB airspace. The 52 OSS/OSW's callsign is "Spangdahlem Metro" and the assigned UHF frequency is 284.425 MHz.

4.10.1. The 52 OSS/OSW will solicit Pilot Reports (PIREPs) during each PMSV contact with aircrew. PIREPs enhance forecasting services and flight safety throughout the region for pilots or other flight operations.

4.10.2. Long term outages of 6 hours or more will be annotated via NOTAM until repaired.

4.10.3. Phone patch is available through the SCP at 258.7 MHz.

4.10.4. Ramstein AB provides back-up PMSV support during their duty hours published in the FLIP supplement for Europe utilizing the same frequency as Spangdahlem (284.425 MHz) and the callsign "Ramstein Metro."

4.10.5. Aircraft requiring PMSV support during non-duty hours can phone patch the 21 OWS or TACC Weather via 1-800-AIRMOBL (1-800-247-6625).

4.10.6. 52 OSS/OSW is the primary agency for disseminating PIREPS at Spangdahlem AB.

4.11. **Space Weather.** ASE forecasters forward received suspected space weather impacts to the 2d Weather Squadron for analysis and to other agencies which may be affected by the event.

5. Mission Integration Function (MIF).

5.1. **General.** The MIF provides Mission Execution Forecasts (MEFs), flight weather briefing services, MISSIONWATCH, MEF verification, and planning data for the 52 FW flying units.

5.2. **MEFs.** The MEF is the primary tool used to accomplish day-to-day weather support for 52 FW flying operations. MEFs are tailored to individual customer requirements and are developed using a 2-phase process outlined in AFMAN 15-129v2 and local procedures. During this process, the 52 OSS/OSW will tailor and integrate products created by strategic and theater weather centers, as well as information supplied by local units (e.g., flying schedule) and agencies. The end result is a product designed to provide timely, accurate, and relevant weather support to customers. The MEF must be consistent with all 21 OWS and 557th Weather Wing issued products. However, during rapidly changing conditions, emergencies, or when conditions threaten resource protection, the 52 OSS/OSW will verbally update the TOP 3, amend the MEF to accurately reflect conditions, and then brief the 21 OWS when time permits. See [Attachment 5](#) for an example of the 52 OSS/OSW MEF.

5.3. **MISSIONWATCH.** MISSIONWATCH is the process by which 52 OSS/OSW monitors the weather for all local missions. Combined with METWATCH, MISSIONWATCH allows 52 OSS/OSW to monitor operations around Spangdahlem AB, including regional flying areas and routes, in order to issue amendments to any MEF. See [Attachment 7](#) to view the commonly used flying areas.

5.3.1. During rapidly changing conditions or if the MEF is inaccurate, 52 OSS/OSW will amend the MEF to ensure the forecast accurately reflects current or expected conditions and contact the SOF and Top 3 to pass mission impacts. MISSIONWATCH will include determining how weather will affect defined air and ground mission-limiting parameters as listed in [Attachment 4](#).

5.4. Forecast Amendments. An amendment to the MEF flying package is required whenever one or more of the criteria listed in **Table 13** occurs for a designated forecast valid period.

Table 13. MEF Amendment Criteria.

Amendment Criteria			
Ceiling (ft)	2000	700	300
Visibility (m)	5000	3200	1600
Icing	Unforecast, change of intensity or no longer occurring		
Turbulence	Unforecast or no longer occurring (MDT or greater)		
TSTMs	Unforecast or no longer occurring		
Mission Wx	Anytime observed or forecast Go/No Go conditions change from a Go to a No Go (or No Go to a Go) for that mission type (i.e. CAS, CSAR etc...)		
Space Wx	Unforecast severe impacts to GPS or UHF		
Alternate WX	Unforecast change that crosses 1000ft /3200m		
Note: Cig and Vis changes are for going above or below the listed criteria. Amendments will also be made to the take-off/landing data section of the MEF when the ETAD TAF is amended by the 21 OWS for crossing a TAF threshold.			

5.5. Off-station Support. The 52 OSS/OSW is the primary source for tailored weather information for off-station support for 52 FW aircraft. When mission activities occur away from the main operating location, 52 OSS/OSW leadership will determine the most effective means of ensuring Spangdahlem based units receive mission execution weather information.

5.5.1. The 52 OSS/OSW will provide MEFs to Spangdahlem units/assets, i.e. 480 FS or TSPs, transiting or conducting flying missions at other locations by deploying a forecaster with the unit, via reach-back, or by arranging support through other weather units or the OWS servicing the off-station location.

5.6. Additional Aircrew Briefing Support.

5.6.1. **Transient & AMC Aircrew Services.** During controlled airfield hours, transient aircrews may receive flight weather briefings from 52 OSS/OSW according to the standard duty priorities outlined in **Attachment 2**. AMC aircrews filed with the Tanker-Airlift Control Center (TACC) for weather support will be required to contact TACC for weather updates.

5.6.2. During 52 OSS/OSW closure, transient aircrews should contact 21 OWS for flight weather briefing support at DSN 489-2133 or 496-6145.

5.6.3. **175-1 Briefings.** The 21 OWS and 52 OSS/OSW prepare DD Form 175-1, *Flight Weather Briefing*, in compliance with AFMAN 15-129v2. The 21 OWS prepares 175-1 weather briefings when the 52 OSS/OSW is closed. The 52 OSS/OSW and 21 OWS request 24-hr notification for 175-1s.

5.6.4. **Mass Briefings.** The MIF forecasters provide mass weather briefs to the 52 FW assigned units, i.e. 480 FS and TSPs.

5.6.5. Coronet Briefings. 52 OSS/OSW supports host/tenant Coronet aircraft movements departing from Spangdahlem AB with planning and mission weather briefings.

5.6.6. Tactical Decision Aids (TDAs). The 52 OSS/OSW requires a description of the target scenario and 2 hours advance notice to produce Electro Optic (EO) TDAs. The accuracy of the product relies on the detail of the operational input the user supplies. The 52 OSS/OSW uses Target Acquisition Weapons Software (TAWS) to produce tailored target aids. TDA data will be provided by the 52 OSS/OSW in mass briefings and tailored to the day's given missions, upon request.

6. Resource Protection (RP).

6.1. Weather Watches, Warnings, and Advisories (WWAs).

6.1.1. 52 OSS/OSW, in conjunction with the 21 OWS, provides a two-tiered watch-warning-advisory process for resource protection. A watch is issued when the potential for dangerous weather exists. The watch is upgraded to a warning when dangerous weather is imminent, or is occurring.

6.1.1.1. All resource protection products, with the exception of lightning warnings, are issued for a 5nm radius around Spangdahlem AB and are considered "in effect" for Bitburg Annex.

6.1.1.1.1. Spangdahlem AB and the Bitburg Annex have separate lightning warnings—each issued for a 5nm radius of the respective location.

6.1.1.2. Other Geographically Separated Units (GSUs) receive resource protection through separate point warnings via the 21 OWS.

6.1.2. The 21 OWS will issue all forecast watches and warnings and have the overall responsibility for resource protection at Spangdahlem AB. The 52 OSS/OSW ASF will issue all observed WWAs during controlled airfield hours. The 21 OWS will issue all WWAs outside controlled airfield hours and provide additional assistance as required (this includes Bitburg Annex Lightning within 5nm Observed Warning). The 52 OSS/OSW will act as the "eyes forward" for the 21 OWS and will keep them apprised of local conditions. In the event of imminent threat to life and/or property requiring an urgent dissemination (e.g. tornado), 52 OSS/OSW will issue forecast warnings normally issued by the 21 OWS. In these cases, 52 OSS/OSW will inform the 21 OWS as time permits.

6.1.3. WWAs will specify the magnitude and direction of the weather event as applicable. For example, the operational threshold for a wind event is > 50 knots; the OWS will issue a weather warning and specify the peak wind speed and direction in degrees, such as peak gust 65 knots from the 270. The OWS will also specify maximum hail size and rain/snow accumulations meeting or exceeding the WWA threshold.

6.1.4. WWA Numbering System. WWAs will automatically be assigned a number sequentially based on the month and the number of previous. For example, Weather Warning 06-003 is the third warning issued in the month of June, regardless of the warning's stated weather phenomena or method of dissemination.

6.2. Weather Watch. A weather watch is a special notice provided by an OWS or weather flight to supported agencies alerting them to the potential for weather conditions of such intensity to pose a hazard to life or property. The weather watch can be thought of as a "heads up," at which time agencies need to consider implementing required protective actions should a subsequent weather warning be issued. Below, [Figure 2](#) shows an example weather watch.

6.2.1. Upon receipt of a weather watch, operations may continue. However, personnel in high risk areas should be prepared to implement corresponding required protective actions without delay if and when a subsequent weather warning is issued. [Table 14](#) contains weather watches and desired lead times for Spangdahlem AB.

Figure 2. Watch Example.

SPANGDAHLEM AFB WEATHER WATCH #07-002.
VALID 01/2100Z TO 02/0200Z
POTENTIAL FOR LIGHTNING EXISTS WITHIN 5NM.
WEATHER WATCH #07-001 REMAINS IN EFFECT.

6.2.2. This example indicates that lightning potential is forecasted to occur within 5 miles of the base for a 5 hour period. It also emphasizes that this does not override a previous watch that still remains in effect.

Table 14. Weather Watch Criteria for Spangdahlem AB.

Criteria	Desired Lead Time
Potential for lightning exists within 5nm	30 minutes
Potential for tornadoes exists within 5nm	As potential warrants
Potential for severe thunderstorms within 5nm: hail $\geq \frac{3}{4}$ inch and/or winds ≥ 50 kts (including gusts)	4 hours
Potential for damaging winds ≥ 50 kts (including gusts) not associated with thunderstorms	4 hours
Potential for freezing precipitation	As potential warrants
Potential for heavy snow ≥ 2 inches in 12 hours	As potential warrants
Potential for heavy rain ≥ 2 inches in 12 hours	As potential warrants
Note: All watches issued for Spangdahlem AB are considered "in effect" for the Bitburg Annex.	

6.2.3. Watch Initiation. The 21 OWS forecaster will issue watches prior to the expected weather occurrence with as much advance notice as possible to plan protective measures.

6.2.4. Watch Termination. Each watch is issued with a beginning and ending time. Once issued, the 21 OWS forecaster monitors weather conditions and either upgrades the watch to a warning, extends the watch, cancels the watch, or allows it to expire if evaluation shows the conditions will not occur.

6.3. Weather Warning. A weather warning is a special notice to supported agencies giving them advance notification (sufficient time for protective actions) of expected weather

conditions of such intensity to pose a hazard to life or property. Below, **Figure 3** shows an example weather warning.

6.3.1. Upon receipt of a weather warning, required protective actions corresponding to the weather event will be immediately implemented to safeguard personnel and equipment. **Table 15** contains weather warnings and desired lead times for Spangdahlem AB.

Figure 3. Warning Example.

SPANGDAHLE AFB WEATHER WARNING #02-010 VALID 20/1800Z TO 21/0200Z STRONG WINDS 35-49 KTS (INCLUDING GUSTS) NOT ASSOCIATED WITH THUNDERSTORMS, MAX WIND FORECAST 40KTS FROM 270 THIS WEATHER WARNING DOWNGRADES WW #02-009.

6.3.2. This example indicates that a warning for wind speeds between 35-49 knots is forecasted for an 8 hour period, with a maximum wind speed of 40 knots expected. It also indicates that this warning replaces a previous warning for a higher category, in our case a warning for winds greater than 49 knots.

6.3.3. Warning Initiation. Each warning is issued by the 21 OWS with a beginning and ending time. Once issued, the forecaster monitors weather conditions and ensures the warning adequately describes the timing and intensity of the weather threat.

6.3.3.1. Lightning warnings are observed, so they will be issued without an end time (indicated by UFN or Until Further Notice) when observed by the 52 OSS/OSW within 5nm of the base.

6.3.3.2. When the 52 OSS/OSW weather station is not manned, the 21 OWS will issue the observed lightning warning based on automated observation data and other lightning/storm detection methods. The 52 OSS/OSW will notify the 21 OWS upon arrival and departure to coordinate transfer of responsibility for observed weather warning support.

6.3.4. Warning Termination. The 21 OWS forecaster cancels the warning (or allows it to expire) if evaluation shows the conditions have ceased and will not occur again, or will not occur at all.

Table 15. Weather Warning Criteria for Spangdahlem AB.

Criteria	Desired Lead Time
Observed lightning occurring within 5NM of Spangdahlem AB	As observed
Observed lightning occurring within 5NM of Bitburg Annex.	As observed
Tornado is forecast within 5nm.	15 minutes
Moderate thunderstorms are forecast within 5nm: Hail $\geq \frac{1}{4}$ inch but $< \frac{3}{4}$ inch and/or winds 35-49 kts (including gusts).	2 hours
Severe thunderstorms are forecast within 5nm: Hail $\geq \frac{3}{4}$ inch and/or winds ≥ 50 kts (including gusts).	2 hours
Strong winds 35-49 kts (including gusts) not associated with thunderstorms.	90 minutes
Damaging winds ≥ 50 kts (including gusts) not associated with thunderstorms.	2 hours
Freezing precipitation is forecast to occur within 5nm.	90 minutes
Heavy rain accumulation ≥ 2 inches in 12 hours or less.	90 minutes
Heavy snow accumulation ≥ 2 inches in 12 hours or less.	90 minutes
Blizzard (1. SFC VIS ≤ 400 meters; 2. Considerable falling and/or blowing snow; 3. Winds ≥ 30 kts; 4. Duration > 3 hours).	3 hours
Note: With the exception of lightning, all warnings issued for Spangdahlem AB are considered “in effect” for the Bitburg Annex.	

6.4. Weather Advisory. A weather advisory is a special weather product to alert an end user of the occurrence of, or imminent occurrence of weather conditions impacting operations. An advisory is a notification of weather criteria that is less intense than watch or warning criteria, but still has a negative impact to a specified organization or mission. Below, **Figure 4** shows example weather advisory. **Table 16** contains the weather advisories for Spangdahlem AB.

6.4.1. Upon receipt of a weather advisory, the responsible agencies will implement safeguarding procedures.

6.4.2. All weather advisories are based on specific observed criteria and are initiated by the 52 OSS/OSW to notify agencies of currently occurring weather conditions hazardous to operations. The 21 OWS will provide backup assistance as required during ASE non-duty hours. The 52 OSS/OSW will notify the 21 OWS upon arrival and departure to coordinate transfer of responsibility for observed Weather Advisory support.

Figure 4. Advisory Example.

SPANGDAHLEM AFB WEATHER ADVISORY #02-012
VALID 20/1500Z TO UFN
OBSERVED WINDS ≥ 25 KTS

6.4.3. This example indicates a critical wind threshold has been breached valid from the time issued until further notice.

6.4.4. Weather advisories are terminated when the condition is no longer observed or when PIREPs indicate the condition no longer exists.

Table 16. Weather Advisory Criteria for Spangdahlem AB.

Criteria
Observed winds \geq 25 knots
Observed crosswinds \geq 20 kts with a wet runway
Observed crosswinds $>$ 25 kts with a dry runway
Low level wind shear is occurring (reported from PIREPs)
Observed icing (any intensity) is occurring below 10,000 ft (reported from PIREPs)
Ice FOD for F-16s: -07°C to +07°C with fog/precipitation and/or dewpoint within 9°F (5°C) of ambient temperatures between 25°F (-4°C) and 45°F (7°C).
Fight Index of Thermal Stress (FITS)[Caution, Danger, and Cancel]

7. Dissemination Of Weather Information.

7.1. The 52 OSS/OSW or the 21 OWS disseminates observations, TAFs, WWAs to ATC facilities and SCP via JET.

7.2. The 21 OWS will issue forecasted WWAs via the Integrated Weather Warning Coordination (IWWC) system within JET. IWWC is an automated phone system that will relay the conditions of each WWA using a recorded voice. Via IWWC, the 52 OSS/OSW will issue observed WWAs during controlled airfield hours. The IWWC system tracks Spangdahlem AB agency receipt acknowledgement for each WWA message.

7.3. Agencies can view this data using the 52 OSS/OSW Spangdahlem AB's JET guest portal website at: <https://owsjet21.us.af.mil/portal/private/guestspangdahlem/Sensor>. This link is also available on the Spangdahlem AB homepage: www.spangdahlem.af.mil. CAC-enable computers are required to view the JET Portal.

7.4. MEF and other mission weather briefings are disseminated via the base shared drive located at S:\52OSS\EXTERNAL\WEATHER\MEF.

7.5. AOL Weather Dissemination. If the 52 OSS/OSW must evacuate to the AOL, the technicians will notify agencies in **Table 17**. Standard products will continue to be received through JET and the base shared drive as long as the systems remain operational. The on-shift forecaster will continue to perform all shift responsibilities from the AOL.

7.6. In the event of a JET or IWWC outage, observations and WWAs will be disseminated locally to ATC and command post facilities via phone, e-mail, radio, or any means available. Back-up contact numbers can be found in **Table 17**. These products will be disseminated long-line via internet or requesting the 21 OWS or other neighboring weather flight to disseminate via their JET system.

7.7. Communications.

7.7.1. Telephone. 52 OSS/OSW has multi-line phones in the operations area which are used to relay information. In the event of an IWWC outage, WWAs are issued via

telephone to the critical agencies listed in Table 17 to ensure the messages have been received.

Table 17. Voice Dissemination.

Order of Dissemination	Phone
Tower	452-7218
GCA	452-6805
SOF	452-6233
480 FS Top-3	452-6033
Command Post	452-6141
Airfield Management	452-6633/6048
21 OWS	489-2134/2135

8. Back-Up Support.

8.1. **General.** There are dozens of scenarios that could cause an interruption of service from either the 52 OSS/OSW or the 21 OWS. This section briefly describes how weather services will be provided should any such events occur. The 52 OSS and 21 OWS outline specific responsibilities and actions in their Installation Data Plan.

8.2. **21 OWS.** When weather operations at the 21 OWS are interrupted (e.g., power outage, natural disaster, etc), associated TAF, weather watch and warning responsibility may be transferred to the 52 OSS/OSW until the 21 OWS is either postured to resume operations or hand these operations to another OWS. Other 21 OWS weather information responsibilities (e.g., graphical products, 175-1 support) may be transferred to other agencies as necessary

8.3. **52 OSS/OSW.** For standard station evacuations, support will resume from our alternate weather operations site with the OWS assuming responsibilities during any interim period. For longer interruptions, 52 OSS/OSW will coordinate required support with other organizations.

9. Reciprocal Support.

9.1. 52d FIGHTER WING STAFF AGENCIES.

9.1.1. 52 FW Command Post (CP).

9.1.1.1. Disseminates weather WWAs notifications as listed in [Attachment 3](#) so that agencies may take the necessary actions to minimize damage. [Attachment 4](#) lists the weather threats to the 52 FW.

9.1.1.2. Facilitates the recall of the 52 OSS/OSW standby forecaster. See [section 3.2](#) for more information.

9.1.1.3. Transmits OPREP reports when required as a result of severe weather occurrences.

9.1.2. 52 FW Safety (SE).

9.1.2.1. Notifies the 52 OSS/OSW of the following:

9.1.2.2. Investigations of aircraft mishaps of assigned or other military aircraft the 52 FW investigates.

- 9.1.2.3. Investigations of ground accidents involving weather or weather services.
- 9.1.2.4. Coordinates with 52 OSS/OSW on all messages containing references to weather.
- 9.1.2.5. 52 FW/SE will inform 52 OSS/OSW of requirements for seasonal weather briefings at least 72 hours in advance.
- 9.1.3. 52 FW Public Affairs (PA).
 - 9.1.3.1. Upon request, takes photographs covering a 360 degree view of the airfield complex from both the Building 47 and Building 690 observing points for 52 OSS/OSW's visibility binder.
- 9.1.4. 52 FW Plans and Programs (XP).
 - 9.1.4.1. Informs the 52 OSS/OSW of and provides access to plans and programs which require weather planning and inputs
- 9.2. **52 Operations Group (52 OG).**
 - 9.2.1. 52 Operations Group Standardization and Evaluation (52 OG/OGV).
 - 9.2.1.1. Coordinate requirements for SOF and IRC briefings at least 72 hours in advance.
 - 9.2.1.2. Assists 52 OSS/OSW with validating local airfield and range mission weather limitations at least once annually.
 - 9.2.1.3. Ensure SOF duties include procedures to:
 - 9.2.1.3.1. Inform 52 OSS/OSW of any declared alternate airfields.
 - 9.2.1.3.2. Provide any received PIREPs within the local flying area to 52 OSS/OSW within 5 minutes of receipt.
 - 9.2.1.3.3. Receive weather update from the ASF prior to assuming SOF duties for their shift.
 - 9.2.2. 480 Fighter Squadron (480 FS).
 - 9.2.2.1. Ensures flying schedules are available to 52 OSS/OSW
 - 9.2.2.2. Encourage aircrews and TOP 3 to pass PIREPs to 52 OSS/OSW or to ATC/SOF. PIREPs that include cloud amounts, bases and tops, as well as turbulence and icing encountered are particularly valuable.
 - 9.2.2.3. Provide feedback/mission debrief to 52 OSS/OSW.
 - 9.2.2.4. Coordinate weather support for all exercises, deployments, or other off-station needs with 52 OSS/OSW as soon as possible.
 - 9.2.2.5. Ensure the forecaster is incorporated into the planning phase of flying operations.
 - 9.2.2.6. Report to 52 OSS/OSW any suspected space weather impacts to operations (for example, HF radio not functioning during period of solar activity).

9.2.2.7. Coordinate CORONET mission support 52 OSS/OSW at least one week in advance.

9.2.2.8. Coordinate Flight Weather Briefings, DD Form 175-1, at least 24 hours in advance.

9.2.2.9. Provide target details for the optimal development of TDAs.

9.2.3. 52 OSS Airfield Operations (52 OSS/OSA). This section outlines responsibilities of OSW and OSA as part of the Spangdahlem AB Cooperative Weather Watch (CWW) program. If duty conflicts arise with any requirements in the following sections, personnel will consult documented duty priorities and use RM and to complete tasks in order of highest priority.

9.2.3.1. Airfield Management (52 OSS/OSAM).

9.2.3.1.1. Notifies 52 OSS/OSW when updated Flight Information Publications (FLIPs) have been delivered.

9.2.3.1.2. Reports runway conditions (RCR) to 52 OSS/OSW.

9.2.3.1.3. Provides airfield management orientation for weather personnel.

9.2.3.2. Ground Controlled Approach (GCA)(52 OSS/OSAR).

9.2.3.2.1. Provides GCA orientation for weather personnel.

9.2.3.2.2. Relays all PIREPs to ASF technicians within five minutes of receipt for local and long-line dissemination IAW with AFMAN 15-129 v2.

9.2.3.2.3. Reports JET and AMOS malfunctions to 52 OSS/OSW.

9.2.3.2.4. Notifies 52 OSS/OSW when GCA personnel/facilities evacuate/relocate.

9.2.3.3. Air Traffic Control Tower (52 OSS/OSAT).

9.2.3.3.1. Provides tower orientation for weather personnel.

9.2.3.3.2. Takes tower visibility observations (tower VIS) when surface prevailing VIS or tower VIS is < 4 statute miles (6000 meters) and the tower VIS differs from surface VIS by a reportable value).

9.2.3.3.3. Relays all PIREPs and Tower Visibility observations to the OSW technicians within five minutes of receipt for local and long-line dissemination.

9.2.3.3.4. When requested, provides a Pilot-to-Metro Service (PMSV) radio check.

9.2.3.3.5. Relays weather WWAs to aircrews.

9.2.3.3.6. Relays obstructions to visibility.

9.2.3.3.7. Reports when lightning is observed.

9.2.3.3.8. Reports JET and AMOS malfunctions to 52 OSS/OSW.

9.2.3.3.9. Notifies OSW technicians of the following:

9.2.3.3.9.1. Runway lights become inoperative, or if inoperative, become operational.

9.2.3.3.9.2. Tower personnel/facilities evacuate/relocate.

9.2.3.3.9.3. Active runway changes.

9.2.3.3.9.4. Termination of wing flying.

9.2.3.4. Airfield Systems (52 OSS/OSACA).

9.2.3.4.1. Maintains the AN/FMQ-19 and PMSV radio.

9.2.3.4.1.1. OSACA will perform annual inspection of all meteorological equipment and ensure equipment is in good condition and verify no obstructions are affecting the equipment siting and exposure. Weather leadership at the airfield will accompany airfield systems personnel on this inspection and log any new equipment limitation(s) into appropriate Flight Information Handbook or report equipment issues to higher level(s) (e.g., MAJCOM)

9.2.3.4.1.2. OSACA will certify the AN/FMQ-19 annually.

9.2.3.4.1.3. Notify 52 OSS/OSW at least 30 minutes prior to any preventative maintenance and on completion

9.2.3.4.2. Provides a tour of airfield sensors for new weather personnel.

9.2.3.5. Airfield Automation (52 OSS/OSAX).

9.2.3.5.1. The Airfield Operations Automation Manager or AOAM / NCOIC, Airfield Automation Manager or NAAM Acts as a focal point for all non-JET related Airfield Automation System, also known as just AFAS, issues.

9.2.3.6. Weather Support to Airfield Operations.

9.2.3.6.1. 52 OSS/OSW will notify Tower and GCA of the following:

9.2.3.6.1.1. When weather personnel are present for duty and again when they leave.

9.2.3.6.1.2. When weather personnel evacuate/relocate to the AOL.

9.2.3.6.1.3. When augmentation has commenced and when the JET system is returned back to AUTO status.

9.2.3.6.1.4. When JET or AMOS equipment malfunctions and when the equipment must be taken down for troubleshooting or maintenance.

9.2.3.6.2. Limited Observation Training. All new ATC personnel will call the 52 OSS/OSW and schedule an appointment with the 52 OSS/OSW Training Manager for local familiarization. At the end of training, ATC personnel are tested for qualification and will receive a familiarization tour of the weather station. Orientation and certification will be conducted by certified weather personnel and documented on the AF Form 3622, ATC/Weather Certification and Rating Record. Training will cover the following:

9.2.3.6.2.1. Basic observing techniques.

9.2.3.6.2.2. Visibility and obstructions to visibility.

9.2.3.6.2.3. Local weather phenomena.

9.2.3.6.2.4. Decoding observations and TAFs.

9.2.3.6.2.5. JET operations and AMOS overview, including automated and augmented observation procedures.

9.2.3.6.2.6. Weather WWAs.

9.2.3.6.2.7. Importance of a cooperative OSW/OSA relationship.

9.2.3.6.3. Provide Tower facilities RVR readings when reported. If JET is inoperative, OSW will update GCA and Tower of any changes to RVR until JET and/or AMOS have been restored.

9.2.3.6.4. Act as focal point to resolve all JET and AMOS outages. Pass pertinent weather data to GCA and Tower via telephone until JET/AMOS outages are resolved. In the event of telephone outage, time-sensitive weather data (i.e., RVR, rapidly changing ceiling, rapidly changing visibility, etc.) can be passed via PMSV while the JET/AMOS is being augmented.

9.2.3.6.5. Validate the Tower visibility charts at least annually and provide Tower with an MFR after the inspection to keep in their visibility binder.

9.2.3.6.6. Weather personnel will ensure supported ATC agencies are notified of all outages prior to contacting any maintenance agency.

9.2.4. 606 Air Control Squadron.

9.2.4.1. Reports degradation or loss of a system capability because of suspected space weather interference to 52 OSS/OSW.

9.2.5. 52 Operations Group Detachment 1, Łask AB, Poland (Det 1). In general, weather support for Det 1 is provided by the host nation. This includes meteorological observations, TAFs, and WWAs. The 21 OWS will provide support to 52 FW aircraft when operating out of Łask AB. The 52 OSS/OSW will request support NLT 2 weeks prior to the start of the rotation.

9.2.5.1. Any changes to required weather support must be coordinated through the 52 OSS/OSW and documented on the IDP.

9.3. 52 Maintenance Group.

9.3.1. Maintenance Operations Center (MOC).

9.3.1.1. Receives weather WWAs from CP and notifies base maintenance agencies.

9.3.1.2. Provides MOC orientation to newly assigned weather personnel.

9.3.1.3. Coordinate updates to weather portions of Emergency Actions (EA) Checklists with WF leadership and send new copies of EA Checklists to WF leadership.

9.4. **52 Munitions Maintenance Group (52 MMG).** The 52 MMG has four Munitions Support Squadrons (MUNSS) which are geographically separated units (GSUs) located outside of Spangdahlem AB:

9.4.1. 701 MUNSS, Kleine Brogel AB, Belgium

9.4.2. 702 MUNSS, Buechel AB, Germany

9.4.3. 703rd MUNSS, Volkel AB, Netherlands

9.4.4. 704th MUNSS, Ghedi AB, Italy

9.4.5. The 21 OWS is responsible for RP and maintains a separate IDP for each MUNSS to document required support.

9.4.6. Any changes to required weather support for any of the MUNSS must be coordinated through the 52 OSS/OSW and documented on the respective IDP.

9.5. **52 Mission Support Group.**

9.5.1. **52 Communications Squadron.**

9.5.1.1. Responsible for maintenance of phones, local area network, and internet communications.

9.5.1.2. Houses and maintains the JET Sever as outlined in the JET MOA between the 24th Air Force and the 557 Weather Wing.

9.5.1.3. Upon notification, installs TCNO patches required for the JET server.

9.5.1.3.1. Weather personnel will download the patches from the Jet Support website and provide a link to their location on the shared network drives.

9.5.2. **52 Security Forces Squadron (52 SFS).**

9.5.2.1. **Military Working Dog Training.** 52 OSS/OSW will provide weather information, to include observed and forecasted wind speed and direction, ambient temperature, and lightning data via the on-duty forecaster, as requested, to support 52 SFS working dog training.

9.5.2.2. **Road Condition Status (ROADCON).** 52 OSS/OSW will provide observed and forecasted snow accumulation and ice information as requested to aid the 52 SFS, 52 MSG/CC, and 52 MSG/CD in road condition status determination. NOTE: 52 OSS/OSW does NOT make the ROADCON determination; it will only provide the necessary weather information required by decision makers. The forecaster on duty will direct all ROADCON inquiries to the Spangdahlem AB webpage: <http://www.spangdahlem.af.mil>.

9.5.2.3. 52 SFS will notify 52 OSS/OSW of observed hail, tornadoes, freezing precipitation, or other significant weather encountered during routine patrols around Spangdahlem AB and the Bitburg Annex as part of the CWW program.

9.5.3. **52 Civil Engineer Squadron.**

9.5.3.1. Emergency Management (52 CES/CEX) prepares & maintains disaster preparedness plans for base survival and recovery during a natural disaster. 52

CES/CEX will coordinate any weather related information regarding emergency plans with 52 OSS/OSW.

9.5.3.2. Snow and Ice Control/Removal (52 CES/CEOH) will notify 52 OSS/OSW the scheduling of bi-annual snow and ice control meeting, a pre-season and post-season snow brief.

9.5.3.3. In the event of a toxic chemical spill or release, the 52 CES/CEX may have someone call the weather flight for information used in the Fire Department or CE Readiness Toxic Corridor programs.

9.5.3.4. In the event of an emergency, 52 CES/CEX will coordinate emerging WWA requirements as soon as possible.

9.5.3.5. The Fire Department will provide access for 52 OSS/OSW personnel to building 560.

9.5.3.6. 52 OSS/OSW will provide average temperatures for heating/cooling days to Civil Engineering, usually during the onset of fall and spring. Other specialized data is available upon request.

9.6. Tenant Units.

9.6.1. **726 Air Mobility Squadron (AMS).** The 726 AMS is a tenant unit utilizing the Spangdahlem airfield and base facilities. The 618 AOC (TACC)/XOW and the 21 OWS provide routine support to Air Mobility missions. Requests for weather support will be handled on a case-by-case basis IAW Attachment 2, 52 OSS/OSW duty priorities.

9.6.2. Armed Forces Network Detachment 9 (AFN Det 9).

9.6.2.1. AFN broadcasts the current and forecast weather information over the radio throughout the day. This information can be found on the AFN tab of the JET Guest Portal: <https://owsjet21.us.af.mil/portal/private/guestspangdahlem/Sensor>. The link is also available on the right-hand side of the Spangdahlem homepage: www.spangdahlem.af.mil.

9.6.2.2. 52 OSS/OSW will provide a 7-day forecast daily, Monday through Friday, via e-mail by 1000L. An evening update will be distributed Sunday through Thursday by 2200L.

9.6.2.3. 52 OSS/OSW will provide training for broadcasting basic weather information to AFN DJs upon request.

9.7. All 52 FW Agencies.

9.7.1. Notify 52 OSS/OSW of problems with JET equipment.

9.7.2. Notify 52 OSS/OSW, through proper chain of command, of new weather support requirements.

9.7.2.1. Each unit at Spangdahlem AB is responsible for coordinating additional WWA support or special notification for existing WWAs with 52 OSS/OSW. Each customer requesting support must validate the requirement by providing 52 OSS/OSW with a list of protective actions for each WWA. The protective actions for current WWAs are listed in [Attachment 4](#).

9.7.3. Coordinate changes and additions to weather support requirements as soon as they are foreseen.

9.8. Transient Aircrew Support.

9.8.1. Transient Aircrew Services. During controlled airfield hours, transient aircrews may receive flight weather briefings from 52 OSS/OSW according to the duty priorities outlined in **Attachment 2**.

9.8.1.1. Outside controlled airfield hours, transient aircrews should contact 21 OWS for flight weather briefing support at DSN 489-2133 or 496-2136.

9.8.1.2. Both the 52 OSS/OSW and 21 OWS require 24 hour advanced notice for flight weather briefings.

9.8.2. Flying units in which the 52 FW or 52 OG has operational control (OPCON) or tactical control (TACON), e.g. TSPs, will make every effort to provide or arrange for their own weather support prior to arriving in theater. This includes initiating a request for forces through their home MAJCOM.

9.8.2.1. While assigned to the 52 OG, flying units will follow the requirements listed for the 480 FS in section 9.2.2 if the 52 OSS/OSW is tasked to provide support.

JOSEPH D. MCFALL, Colonel, USAF
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 10-206, *Operational Reporting*, 11 Jun 2014
AFI 11-202V3, *General Flight Rules*, 07 Nov 2014
AFI 11-215, *USAF Flight Manuals Program*, 22 Dec 2008
AFI 13-201, *Airspace Management*, 21 Aug 2012
AFI 13-204V3, *Airfield Operations Procedures and Programs*, 1 Sep 2010
AFI 15-114, *Functional Resource and Weather Technical Performance Evaluation*, 7 Dec 2001
AFI 15-128, *Air Force Weather Roles and Responsibilities*, 7 Feb 2011
AFMAN 15-111, *Surface Weather Observations*, 27 Feb 2013, Incorporating Through Change 2, 21 Jan 2016
AFMAN 15-124, *Meteorological Codes*, 28 Feb 2013
AFMAN 15-129V1, *Air and Space Weather Operation—Characterization*, 7 Dec 2011
AFMAN15-111 V2, *Air and Space Weather Operations—Exploitation*, 7 Dec 2011
AFMAN 33-363, USAFE Supplement, *Management of Records*, 25 Nov 2008
AFPAM 11-238, *Aircrew Quick Reference to the METAR and TAF Codes*, 17 Mar 2011
AFPD 15-1, *Air Force Weather Operations*, 12 Nov 2015
SABI 13-201, *Airfield Operations*, 9 Sep 2010, Incorporating Change 1, 28 October 2011
AFI 11-2F-16V3, *Spangdahlem Supplement, F-16--Operations Procedures*, 30 Dec 2013

Prescribed Forms

AF Form 3622, *Air Traffic Control/Weather Certification and Rating Record*
AF Form 3803, *Surface Weather Observations (METAR/SPECI)*
AF Form 3806, *Weather Watch Advisory Log*
AF Form 3810, *Weather Warning and Weather Advisory Data*
DD Form 175-1, *Flight Weather Briefing*

Adopted Forms

AF 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

21 OWS—21st Operational Weather Squadron
52 OSS/OSW—52d Operations Support Squadron Weather Flight
AFI—Air Force Instruction

AFMAN—Air Force Manual
AFPAM —Air Force Pamphlet
AFW—Air Force Weather
AFWA—Air Force Weather Agency
AGL—Above Ground Level
AMC—Air Mobility Command
AMOS—Automated Meteorological Observation System
AOL—Alternate Operating Location
ASF—Airfield Support Function
ATC—Air Traffic Control
BWW—Basic Weather Watch
C—Celsius
CBRNE—Chemical, Biological, Radiological, Nuclear, and Explosives
CDM—Chemical Downwind Message
CP—Command Post
CWW—Cooperative Weather Watch
DLT—Desired Lead Time
DoD—Department of Defense
EA—Emergency Actions
CDM—Chemical Downwind Message
EDM—Affective Downwind Message
EM—Emergency Management
EO—Electro Optics
EOC—Emergency Operations Center
EW—Emergency War Order
FLIP—Flight Information Publication
FW—Fighter Wing
GCR—Ground Control Radar
GSU—Geographically Separated Unit
IAW—In Accordance With
IWWC—Integrated Weather Warning Coordination
KTS—knots

LAN—Local Area Network
JET—Joint Environmental Toolkit
LLWS—Low Level Wind Shear
MEF—Mission Execution Forecast
MEFP—Mission Execution Forecast Process
METAR—Aviation Routine Weather Report
METWATCH—Meteorological Watch
MOC—Maintenance Operations Center
MSL—Mean Sea Level
MIF—Mission Integration Function
NIPRNET—Nonsecure Internet Protocol Router Network
NM—Nautical Mile
NOTAM—Notice to Airmen
OPR—Office of Primary Responsibility
OPREP—Operational Report
ORM—Operational Readiness Management
OSW—Operational Weather Squadron
PEX—Patriot Excalibur
PIREP—Pilot Report
PMSV—Pilot-to-Metro Service
RCR—Runway Condition Reading
RVR—Runway Visual Range
RVRNO—Runway Visual Report Not Available
RH—Relative Humidity
RSC—Runway Surface Condition
SABI—Spangdahlem Air Base Instruction
SIPRNET—Secret Internet Protocol Router Network
SOF—Supervisor of Flying
SPECI—Aviation Special Weather Report
SWAP—Severe Weather Action Procedures
SWAT—Severe Weather Action Team
TACC—Tanker-Airlift Control Center

TAF—Terminal Aerodrome Forecast

TAWS—Target Acquisition Weapons Software

TDA—Tactical Decision Aid

TSPs—Theater Support Packages

UHF—Ultra High Frequency

USAFE—United States Air Forces in Europe

WWAs—Watches, Warnings, and Advisories

Terms

Desired Lead-time—The amount of advanced notice a supported agency desires before the onset of a particular weather phenomenon.

Go/No-Go —When a weather forecast or MEF indicates favorable or unfavorable conditions for a particular event or mission. Highlights a possible decision point for an operator.

Limited Duty Station—A weather station that manned less than 24-hours per day.

Meteorological Watch—The monitoring of weather for a designated military operating area and informing supported agencies when certain weather conditions could affect operations.

Mission Execution Forecast—A MEF is the integration of strategic center products and perishable weather data to support an operator's weapon systems and tactics.

MISSIONWATCH — Monitoring the weather within a route, sortie, or training area and advising organizations when forecast or observed conditions breach operational thresholds or when hazardous weather conditions affect operations or pose a threat to life or property.

Operational Weather Squadron — An organization with regional forecast responsibility comprised of management, staff, and technical personnel and its assigned resources. Their mission is to produce fine-scale tailored weather forecast products and services to customers within their area of responsibility.

Weather Advisory — A special notice provided to a supported agency when an established weather condition is occurring that could affect its operation.

Weather Warning — A special notice provided to supported customers that alerts them of weather conditions (occurring or expected to occur within 5 NM of the center point of the runway) of such intensity as to pose a hazard to life or property.

Weather Watch — A special notice provided to supported customers that alerts them of conditions favorable for the development (potential) of weather conditions of such intensity as to pose a hazard to life or property.

Attachment 2

DUTY PRIORITIES

Table A2.1. 52 OSS/OSW Duty Priorities.

Priority	Duties
1	Perform Emergency War Order Taskings
2	Execute 52 OSS/OSW evacuation
3	Respond to aircraft and ground emergencies
4	Respond to Pilot-to-Metro Service (PMSV) contacts
5	Provide Weather Information for Supervisor of Flying (SOF), OG/CC, or OG/CD.
6	Perform Severe Weather Action Plan (SWAP) operations / Issue Observed WWAs
7	Augment AMOS Observations for Mandatory Elements
8	Provide "Eyes Forward" / Collaborate with 21 OWS
9	Produce/disseminate Mission Execution Forecasts (MEF)
10	Disseminate Urgent PIREPs and Special AIREPs to OWS
11	Disseminate PIREPs/AIREPs
12	Perform MISSIONWATCH activities
13	Provide flight weather briefings (i.e. DD Form 175-1)
14	Provide all other briefings (i.e. staff briefs, phone briefs, battle staff briefings). Prioritized by operational necessity.
15	Accomplish Weather Functional training
16	Accomplish administrative tasks

Table A2.2. 21 OWS DUTY PRIORITIES.

Priority	Duties
1	Perform WT Emergency War Order Taskings
2	Respond to Aircraft/Ground Emergencies
3	Execute WT Evacuation
4	Provide products & services in support of combat, contingency, and Military Operations Other Than War
5	Provide airborne aircrew support
6	Provide resource protection products (forecast weather watches, warnings, advisories, etc.) as such:
6.1	WF notification
6.2	IWWC dissemination
6.3	Back-up phone calls
7	Prepare and disseminate peacetime/exercise and operational-level graphics and alphanumeric products
8	Prepare and disseminate TAF
9	Provide scheduled flight weather Mission Execution Forecasts (MEF) and tactical-level, non-contingency MEFs
10	Provide other aerospace weather products, information, and weather briefings (5-Day forecasts, etc.)
11	Accomplish other routine weather requirements (synoptic/regional charts, discussion bulletins, AFN support, etc.)
12	Accomplish recurring training
13	Accomplish administrative tasks

WWA NOTIFICATION MATRICES

Table A3.1. CP Weather Advisory Notifications.

Agency / Advisory	Surface winds ≥ 25kts	Crosswinds ≥ 15kts (Wet Runway)	Crosswinds ≥ 20 kts (Dry runway)	Low Level Wind Shear (From PIREP)	FITS	Ice Fod (F-16)	Icing Below FL100 (From PIREP)
FW/CC	X						
FW/CV	X						
OG/CC	X	X	X	X	X	X	X
MXG/CC	X				X	X	
MMG/CC	X						
MSG/CC	X						
MDG/CC	X						
FW/CCC							
FW/DS	X						
SFS/BDOC	X						
FIRE DISPATCH	X						
MOCC	X	X	X	X	X	X	X
SNOW CONTROL							
VEHICLE DISPATCH	X						
606 ACS	X						
CS/CFP	X						
MDG/AMBULANCE SERVICES	X						
AFN DET 9	X						
SPANG/BITBURG COMMISSARY							
FLIGHT SIM							
GOLF COURSE	X						
BILLETING	X						

Table A3.2. SCP Weather Watch and Warning Notifications.

Agency / Watch or Warning	Surface Winds 35-49 Kts	Surface Winds ≥ 50 Kts	Lightning w/in 5 NM of Spangdahlem AB	Lightning w/in 5 NM of Bitburg Annex	Tornado	Moderate T-storms	Severe T-storms	Heavy Precipitation (≥ 2" rain or snow in 12 hrs)	Blizzard	Freezing Precipitation
FW/CC	X	X	X	X	X	X	X	X	X	X
FW/CV	X	X	X	X	X	X	X	X	X	X
OG/CC	X	X	X	X	X	X	X	X	X	X
MXG/CC	X	X	X	X	X	X	X	X	X	X
MMG/CC	X	X	X	X	X	X	X	X	X	X
MSG/CC	X	X	X	X	X	X	X	X	X	X
MDG/CC	X	X	X	X	X	X	X	X	X	X
FW/CCC			X	X	X	X	X	X	X	X
FW/DS	X	X	X	X	X	X	X	X	X	X
SFS/BDOC	X	X	X	X	X	X	X	X	X	X
FIRE DISPATCH	X	X	X	X	X	X	X	X	X	X
MOCC	X	X	X	X	X	X	X	X	X	X
SNOW CONTROL								X (Snow Only)	X	X
VEHICLE DISPATCH	X	X	X	X	X	X	X	X	X	X
606 ACS	X	X	X	X	X	X	X	X	X	X
CS/CFP	X	X	X	X	X	X	X	X	X	X
MDG/AMBULANCE SERVICES	X	X	X	X	X	X	X	X	X	X
AFN DET 9	X	X	X	X	X	X	X	X	X	X
SPANG/BITBURG COMMISSARY			X	X	X	X	X	X	X	X
FLIGHT SIM			X	X	X	X	X	X	X	X
GOLF COURSE	X	X	X	X	X	X	X	X	X	X
BILLETING	X	X	X	X	X	X	X	X	X	X

A3.2. Maintenance Operations Center (MOC) Weather Notifications: The MOC broadcasts all weather advisories, watches and warnings over the maintenance nets.

Attachment 4

52 FW WEATHER LIMITATIONS

A4.1. Greatest weather threats to Spangdahlem AB, mission limiting weather phenomena, and what actions units will take when that phenomena occurs.

Table A4.1. Wind.

Winds	Unit	Reference	Action
20kts	Maintenance Operations Center	1A-10A-2-1-1	Tie down all jack pads when jacking
25kts	52 Equipment Maintenance Squadron, Maintenance Operations Center	AFOSHSTD 91-100 1F-16CJ-2-00GV-00-1	Close hangar doors and secure. Remove maintenance equipment from aircraft parking areas and secure. Cease aircraft towing operations.
30kts	480 Aircraft Maintenance Unit	1F-16C-2-00GV-00-1	Use caution with open F-16 canopies Down-jack jacked F-16s
35kts	480 FS	Local Training Procedures	Parachute Dragging Limits (Ejection) Cease launching aircraft.
40kts	52 Equipment Maintenance Squadron, 606 Air Control Squadron	AFMAN 91-201 1A-10A-2-1-1 TO 52P3-2TPS75-2-1	Cease outdoor munitions operations Decision to take down radar made by Chief of Maintenance
45kts	52 LRS Logistics Readiness Squadron.	AFOSHSTD 91-100	Fuel operations cease
50kts	52 Maintenance Group, 480th Aircraft Maintenance Units, Maintenance Operations Center, 52 CMS/LGMM Logistics Maintenance Mechanical	AFOSHSTD 91-100 1F-16CJ-2-00GV-00-1 1A-10A-2-1-1	Shelter aircraft, tie down transient aircraft Double chock main landing gear wheels Retract flaps and speed brake Close and lock F-16 canopies
52kts	52 OSS/OSACR RADAR Maintenance, 606 Air Control Squadron	TO 52P5-2GPN21-2 TO 52P3-2TPS75-2-1	Place AN/GPN-20 Airport Surveillance RADAR in free wheel status and turn it off Take down the TPS-75 radar
55kts	Maintenance	1F-16CJ-2-00GV-00-1	Close F-16 radomes

	Operations Center, 480th Aircraft Maintenance Units		
70kts	Maintenance Operations Center, 480 Aircraft Maintenance Unit	1F-16CJ-2-00GV-00-1	Tie down unsheltered F-16s
Steady: 75kts Gusts: 94kts	52 OSS/OSA Airfield Operations	AFI 13-204v3SABI 13-201	Evacuate the tower
130kts	52 OSS/OSACR	TO 52P5-2GPN21-2	Remove and relocate AN/GPN-20 Radar (ASR) (Highest wind recorded since 1973 – 90 knots)

Table A4.2. Cross Wind.

Cross wind	Unit	Reference	Action
20kts (wet)	480 FS, AMU	TO 1F-16CM-1-1	Cease F-16 operations
25kts (dry)	480 FS, AMU	TO 1F-16CM-1-1	Cease F-16 operations

Table A4.3. Ice FOD.

Temp/Humidity	Unit	Reference	Action
Between 7 C° and –7 C°/RH ≥70% or any visible water	Maintenance Operations Center, 480 FS, 480 Aircraft Maintenance Unit	TO 1F-16CJ-2-70JG-00-1	Maintenance personnel visually monitor jet engine for ice formation.

A4.2. Icing Avoidance:

A4.2.1. F-16 aircraft should avoid operating in areas of icing.

A4.3. Turbulence Avoidance:

A4.3.1. F-16 aircraft should avoid areas of turbulence.

Table A4.4. Lightning.

Lightning	Unit	Reference	Action
Watch (potential exists for thunderstorms)	Maintenance Operations Center, 52 Operations Group, 52 MXG, Maintenance Group 52 Equipment Maintenance Squadron, 52 Logistics Readiness Squadron	AFOSHSTD 91-100	Operations may continue; however all personnel must be prepared to implement lightning warning procedures without delay
Warning (lightning is observed within 5 NM)	Maintenance Operations Center, 52 Operations Group, 52 MXG, Maintenance Group 52 Equipment Maintenance Squadron, 52 Logistics Readiness Squadron, 52 SVS, 52 Communications Squadron, 52 Civil Engineering Squadron, 606 Air Control Squadron	AFOSHSTD 91-100 AFMAN 91-201 TO 52P3-2TPS75-2	Cease all outside activities, including recreational activities, and seek shelter Cease all aircraft fuel servicing and maintenance activities (including Liquid Oxygen servicing) All explosives operations to include loading, unloading, or pre-load operations will cease when outdoors or at an indoor location that has no Lightning Protection System (LPS) protection. The continuation of explosives operations within an LPS protected facility is not prohibited. When continuing operations in LPS equipped facilities, assess the need and urgency for doing so. Cease all open air and underground utility work. Secure Satellite Communication TSC-100A satellite dish.

A4.4. Thunderstorm Avoidance Rules (IAW United States Air Force Europe supplement to AFI 11-202, Vol 3):

A4.4.1. Below Flight Level 23,000 Feet (FL 230), avoid by at least 10 nm.

A4.4.2. At or above FL 230, avoid by at least 20 nm.

Figure A4.1. F-16 Block 50.

The 480th Fighter Squadron - the Warhawks

The squadron flies the F-16CM Block 50 Fighting Falcon aircraft, informally referred to as the Viper. The F-16 is a highly maneuverable multi-role fighter aircraft and has proven itself in air-to-air and air-to-surface combat. In the air-to-air role, the Fighting Falcon wields a 20mm cannon, AIM-9 air-to-air infrared missiles, and AIM-120 Advanced Medium Range Air-to-Air Missiles. The aircraft carries a variety of air-to-surface ordnance, including High-speed Anti-Radiation Missiles and precision-guided munitions, as well as a full complement of self-protection chaff and flares.

Aircraft: F-16 Block 50	Name: Fighting Falcon
Manufacturer: Lockheed Martin Corp.	Category Aircraft: II
Primary Mission: Multi-role fighter	Crew: F-16C: One; F-16D: Two
Max Range: Over 1,740 nm	Ceiling: Above 50,000 ft
Munitions: Six hardpoints or nine hardpoints for air-to-air missiles (<u>AIM-7 Sparrow</u> , <u>AIM-9 Sidewinder</u> , and <u>AIM-120 AMRAAM</u>); air-to-surface missile (<u>AGM-88 HARM</u>); air-to-surface munitions (<u>AGM-65 Maverick</u> and various kinds of bombs); Electronic Countermeasure (ECM) Pods (AN/ALQ-119, AN/ALQ-131, and AN/ALQ-184); GAU-4 20mm M-61 Vulcan Cannon with 510 rounds; <u>Advanced Targeting Pod (ATP)</u> ; and <u>JSOW</u>	

Weather Sensitivities

Max X-Wind Comp: 25 kt (Dry), 20 kt (Wet)

Induction Icing Thresholds: Critical for engine startup: Temp < 07°C (45°F) and visible moisture (fog: Vis < 1 nm, rain, snow, water on runway, etc.) or when ice/snow is present. Ice FOD: Temperature is between 25°F (-04°C) and 45°F (07°C) and the temp/dew point spread is < 09°F (04°C) or temp is between 20°F (-07°C) and 45°F (07°C) and any precipitation is occurring.

Icing: Avoid MDT or greater	Turbulence: Avoid observed or forecast SVR or greater
Lightning/TSTMS: Avoid if possible	In-Flight Refueling: VSBY must be \geq 1 nm

Radar: No weather radar; can detect SVR weather when radar is in ground mode.

Remark: Cloud cover > 3/8 and cloud bases < 3,000 ft degrade attack options and maneuverability. Cloud cover > 5/8 and cloud bases < 1,000 ft significantly degrade visual attacks and maneuverability. Attacks become predictable by restricting aircraft to cloud free corridors. VSBY < 5 nm degrades navigational and terrain avoidance capability which reduces the time available to acquire and identify targets. Any occurrence of freezing rain delays mission launch because exposed aircraft must be deiced. Rain > light intensity degrades the pilot's visual and infrared detection ranges. Any occurrence of snow degrades visual and infrared detection ranges.

Table A4.5. “GO/NO GO” Weather Thresholds for F-16 Mission Execution Forecasts.

Mission	Description	Flt Level	Ideal WX conditions
DACM	Dissimilar Air Combat Maneuvers	100-240	10K of clear airspace above 10K MSL
DACT	Dissimilar Air Combat Trng	100-240	15K of clear airspace above 10K MSL
AHC	Acft Handling Characteristics	100-240	10K of clear airspace above 10K MSL
ASC	Air Strike Control	SFC-240	No worse than 2Kft CIG or 8000m Sfc Vis
BFM	Basic Fighting Maneuvers	100-240	8K of clear airspace above 10K MSL
BSA	Basic SFC Attacks	SFC-240	No worse than 5000ft cig / 8000m Sfc Vis
CAS	Close Air Support	SFC-240	No worse than 10000ft cig / 8000m Sfc Vis
CSAR	Combat Search and Rescue	SFC-240	No worse than 2000ft cig / 8000m Sfc Vis
DCA	Defensive Counter Air	100-500	10K of clear airspace above 10K MSL
DEAD	Destruction of Enemy Air Defense	SFC-300	Can see the ground below 20,000ft
FCF	Functional Confidence Flight	SFC-240	8K CIG/Waiverable to 4K by OG
INST	Instrument Training	SFC-250	Takeoff mins for PWC
JMO	Joint Maritime operations	100-350	8K clear air above 10k MSL/8000m Sfc Vis
LAO	Local Area Orientation	010-250	VFR Conditions
NAV	Navigational	010-250	Takeoff mins for PWC
NVG	Night Vision Goggles	050-250	<2.2 mlux LO Illum or: ≥2.2 mlux HI Illum
OCA	Offensive counter Air	100-350	10K of clear airspace above 10K MSL
RED	Red Air	100-240	Driven by Blue Air Requirements
SAT	SFC Attack Tactics	SFC-300	Can see the ground below 24,000ft
SEAD	Suppression of Enemy Air Defense	SFC-300	5k of clear airspace over polygon
SWEEP	Sweep	100-350	10K clear air above 10k MSL
TI	Tactical Intercepts	100-500	10K of clear airspace above 10K MSL
TST	Time Sensitive Targeting	SFC-300	Can see the ground below 20,000ft
XC	Cross Country	SFC-400	Takeoff / Alternate & Destination mins

Attachment 5

EXAMPLE MISSION EXECUTION FORECAST.

Figure A5.1. Regional Satellite Imagery.

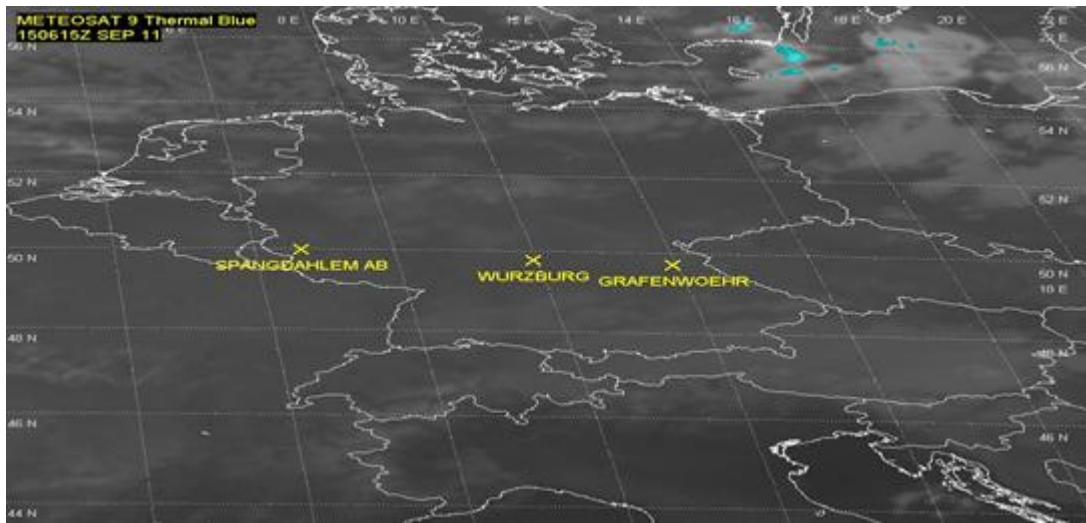


Figure A5.2. Spangdahlem AB Local Forecast Data.

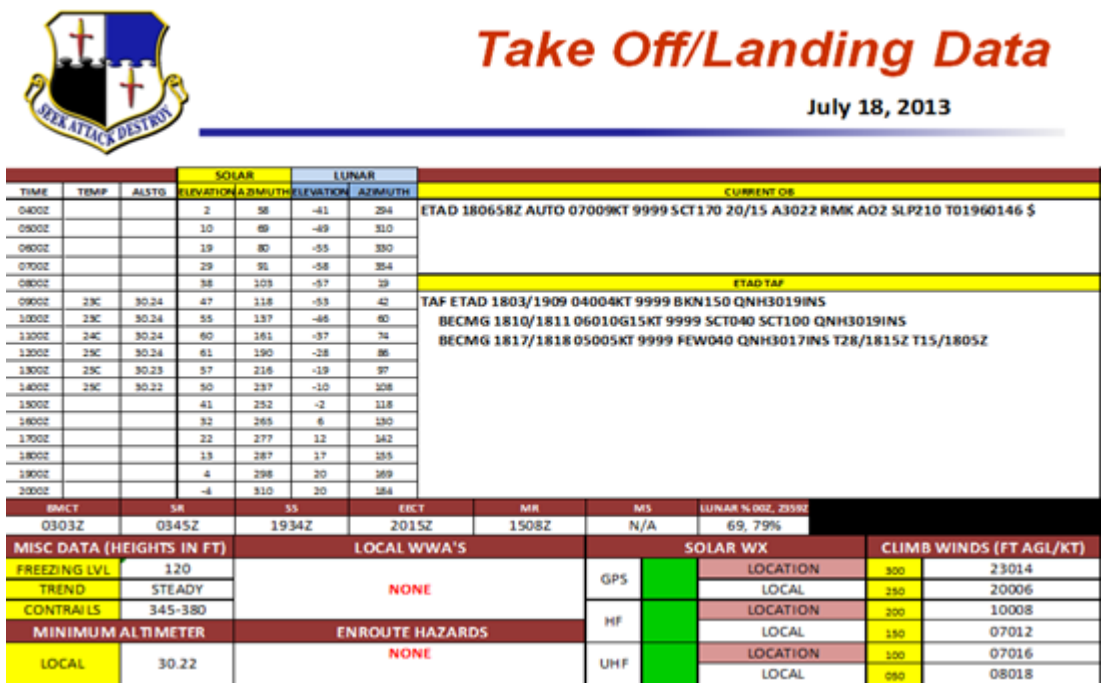


Figure A5.3. Mission Area/Range Forecast Data.



Area Forecast #1

AREA	TRA 205				
09Z-14Z	06010G15KT 9999 SCT040/050 SCT120/300				
HAZARDS	NONE				
FL (FT AGL)	D-VALUES	FL WINDS (KT)	FL (FT AGL)	D-VALUES	FL WINDS (KT)
100	+0560	070 10	400	+1340	260 10
050	+0420	080 15	350	+1200	230 10
040	+0390	070 20	300	+1140	240 10
030	+0360	070 20	250	+1010	220 05
020	+0330	060 15	200	+0870	170 05
010	+0300	070 15	150	+0720	090 10

Figure A5.4. Additional Mission Area/Range Forecast Data (Optional).




Area Forecast #2

AREA	PAMPA/TMA-D				
07-09Z	20007KT 8000 BR BKN007/020 SCT020/050 A3015				
09-11Z	20007KT 9999 FEW007/020 FEW020/050 A3015				
HAZARDS	NONE				
FL (FT AGL)	D-VALUES	FL WINDS (KT)	FL (FT AGL)	D-VALUES	FL WINDS (KT)
100	+0425	25015	400	+1210	27060
050	+0295	25010	350	+1165	27060
040	+0285	25010	300	+1065	27040
030	+0275	25010	250	+0940	25035
020	+0270	23010	200	+0800	25030
010	+0260	22010	150	+0610	25020

Sabers—Seek, Attack, Destroy!

Figure A5.5. Mission Area/Range Airfield Divert Forecast Data.



Diverts

ETAR RAMSTEIN	TAF ETAR 1802/1908 04004KT 9999 FEW150 QNH3015INS BECMG 1811/1812 06010G15KT 9999 SCT040 SCT100 QNH3014INS		
ETSB BUSCHEL	TAF ETSB 180415Z 1805/1814 06010KT 9999 NSW SCT040 SCT150 BKN300		
EHEH EINDENHOVEN	TAF EHEH 180559Z 1806/1912 04009KT CAVOK		
ETNN NORVENICH	TAF ETNN 180429Z 1805/1814 02007KT 9999 NSW SCT200		
	≥ 1500FT / ≥ 5000M		<700-300FT / <1600M
	<1500-0700FT / 5000-1600M		<300FT / <800M

Figure A5.6. Spangdahlem AB Illumination Data.

Time (UTC)	Solar Elevation (°)	Solar Azimuth (° True)	Lunar Elevation (°)	Lunar Azimuth (° True)	Lunar Phase (%)	Ground Illumination (mlux)
400	4	58	-8	250	99	3835449.75
500	12	68	-17	261	99	16306078
600	21	79	-27	271	99	33358118
700	31	90	-36	283	99	51773792
1600	32	268	-26	89	100	54154396
1700	23	279	-17	100	100	35813956
1800	13	290	-8	111	100	18363618
1900	5	301	1	121	100	5135283
2000	-3	312	9	133	100	51753.33
2100	-10	324	15	145	100	106.42

DNCT	SN	SS	ECCT	MR	MS	LUNAR % 00Z, 2300Z
0244Z	0328Z	1946Z	2030Z	1853Z	0309Z	98, 100

Sabers—Seek, Attack, Destroy!

Attachment 6

WEATHER OBSERVATION AND FORECAST CODE FORMATS

A6.1. Longline Observation Code. The longline observation format is the required format for transmission of information between bases. Observations for bases other than Spangdahlem viewed on JET are in this format. A sample is below. See Table A5.1 for complete decoding information. ETAD 290555Z 27007G13KT 8000M HZ SCT040 BKN200 35/23 A2992 RMK A02A TWR VIS 3

A6.1.1. Format (letters in *italics* appear in actual observation) CCCC YYGGggZ (COR) dddff(f)Gfmfm(fm)KT dndndnVdxdxdx VVSM RDD/VVVV WW NNNhhh or VVhhh or SKC TT/DD APPPP RMK

Table A6.1. Weather Dissemination Decode Table.

Reference	Description	Explanation	Examples
CCCC	Location Identifier	Airfield Observation	ETAD (Spangdahlem AB)
YYGGggZ	Time of observation	Consists of the current date (YY), hour (GG), and minute (gg) of the observation in Zulu time. Corrected (COR) if necessary	290555Z, Observation taken on the 29th at 0555Z
dddff(f)Gfmfm(fm)KT	Wind Indicator (<i>Direction and speed based on 2-min average</i>)	ddd is direction the wind is from, ff(f) is the speed in knots, Gfmfm(fm) is the gust speed if applicable. KT = units indicator meaning knots	27007G13KT 270 = West wind VRB = variable with speed 6 knots or less 10 = 10 knots G25 = gusts to 25 knots
DndndnVdxdxdx	Variable winds with speed > 6 knots and direction varying by 60 degrees or more in preceding 10 minutes	Dndndn and dxdxdx are the two extremes of the variability going clockwise around the compass	180V270 = winds are varying from 180 to 270
VVSM	Visibility indicator	Visibility in statute miles	5SM = Furthest predominate visibility marker seen at observing location
RDD/VVVV	Runway visual range	RDD gives the active runway, VVVV gives runway visual range in feet	R27/6000 = Runway visual range on runway 27 is 6000 feet

WW...	<p>Weather/ Obstruction to Visibility Indicator(s) NOTE: In weather observations and forecast code, the WW groups will be constructed by considering items 1-5 in sequence, that is; Intensity/Proximit y, followed by a Descriptor, followed by Weather Phenomena. They are reported with the most significant on the left, progressing to least significant. However, FC (Funnel Cloud) takes precedence over all codes.</p>	<p>1. Intensity/Proximity (Qualifier) LIGHT = - MODERATE = No Indicator HEAVY = + VC = In the vicinity (5-10 miles) 2. Descriptor (Qualifier) BL = Blowing DR = Low Drifting SH = Showers FZ = Freezing TS = Thunderstorm MI = Shallow PR = Partial BC = Patches 3. Precip Type (Weather Phenomena) RA = Rain SN = Snow SG = Snow Grains IC = Ice Crystals DZ = Drizzle PL = Ice Pellets GR = Hail GS = Small Hail and/or Snow Pellets 4. Obscuration (Weather Phenomena) BR = Mist FG** = Fog FU = Smoke VA = Volcanic Ash DU = Widespread Dust SA = Sand HZ = Haze PY = Spray 5. Other (Weather Phenomena) PO = Well-developed Dust/Sand Whirls SQ = Squalls FC = Funnel Cloud (Tornado or Waterspout) SS = Sandstorm DS = Duststorm</p>	<p>TSRA = Thunderstorm with Moderate Rain -RA = Light Rain + SHRA = Heavy Rain Showers BLDU = Moderate Blowing Dust NSW = No significant weather VCSH = Showers between 5 and 10 statute miles of the airfield ** FG (Fog) used when visibility is restricted to less than 5/8 of a mile. Otherwise, the abbreviation BR is used. *VCTS = Thunderstorm between 5 and 10 miles of the airfield *Only used with the Aerodrome Forecast (TAF) code.</p>
NNNhhhCC	<p>Cloud indicator NOTE: may have more than one layer</p>	<p>NNN = Cloud coverage hhh = base of cloud layer in hundreds of feet CC = Cloud type (TCU for Towering Cumulus and CB for Cumulonimbus) VVhhh is used when there is</p>	<p>FEW = 1-25% Cover SCT = 26-50% Cover BKN = 51-99% Cover OVC = 100% Cover SKC = No clouds</p>

		a total obscuration VV = vertical visibility indicator hhh = vertical visibility in feet NOTE: BKN or OVC indicate a ceiling, partial obscurations are denoted as FEW000, SCT000, or BKN000	
TT/DD	Temperature and dew point	Listed in whole degrees Celsius	15/05 = temperature is 15 and the dew point is 5 degrees Celsius
APPPP	Altimeter setting	In inches of mercury	A2992 = Altimeter is 29.92
RMK	Remarks	Plain language remarks	A02A = Observation is taken via automated observing system but augmented by a human observer for accuracy. A02 = Observation is fully automatic. TWR VIS 4800 = tower visibility is 4800 meters

A6.2. Longline TAF Code. The longline forecast format is the required format for transmission of information *between bases*. Forecast for bases *other than Spangdahlem AB* viewed on JET are in this format. See Table A5.2 for details on decoding the TAF code. A sample TAF is shown below:

A6.2.1. ETAD TAF 1818 VRB03KT 8000 HZ SCT020 BKN030 BKN200 QNH2992INS

A6.2.2. BECMG 2021 VRB03KT 3200 BR FU BKN020 QNH2997INS WSCONDS

A6.2.3. BECMG 2324 05005KT 3200 BR BKN020 BKN200 520003 620505 QNH3005INS

A6.2.4. TEMPO 0006 VRB15KT 6000 HZ

A6.2.5. BECMG 1213 24005KT 9999 NSW SCT025 SCT100 BKN200 QNH2987INS
T25/06Z T14/21Z;

A6.2.6. Format (letters in *italics* appear in actual forecast). CCCC TAF (AMD, COR, RTD)
YYG1G1G2G2 VTVT dddff(f)Gfmfm(fm)KT VVVV

A6.2.61. . WW NNNHHHCC or VVHHH.6TBBBD 5TBBBD QNHAAAAINS (*Remarks*)

A6.2.6.2. T##/##Z or TTGG AMD/COR GGGG

Table A6.2. Longline Forecast Decoder.

Reference	Description	Explanation	Examples
CCCC	Location Identifier	Airfield forecast	RKJK - Kunsan AB
YYG1G1G2G2	Valid Period	Consists of the current date (YY) and 24 hour period of the forecast (G1G1G2G2), except for amended (AMD) TAFs. Amended TAFs are valid from the current hour to the end of original TAF. COR is corrected TAF if necessary. RTD is routine delay if necessary.	270303 AMD 270603
VTVT	Group Time Indicator	Time of forecasted change	1617 = 16Z - 17Z
dddff(f)Gfmfm(fm)KT	Wind Indicator	See Table A7.1.	See Table A7.1.
VVVV	Visibility Indicator	Visibility in meters	8000 = 5 statute miles
WW...	Weather/Obstruction to Visibility Indicator(s)	See observation WW group for code explanation.	See observation WW group for code examples.
NNNhhhCC	Cloud indicator	Same as Longline observation format.	Same as Longline observation format.
WShhh/ Dddff(f)KT or WSCONDS	Wind shear for airfield	WS = wind shear hhh = height at which the wind shear threshold is reached ddd = direction, degrees true, of the forecast wind above the indicated height ff = speed, in knots, of the forecast wind above the indicated height	WS015/30035KT = wind shear conditions at 1,500 feet with the wind from 300 true at a speed of 35 knots
5TBBD	Turbulence Indicator(s) NOTE: May have multiple layers.	5 = Identify group as turbulence forecast T = Turbulence type 1 = Light 2 = Moderate in clear air, occasional 3 = Moderate in clear air, frequent	530005 indicates moderate Clear Air Turbulence (CAT) from the Surface to FL050 feet 570804 indicates Severe CAT from FL080 to FL120

		4 = Moderate in cloud, occasional 5 = Moderate in cloud, frequent 6 = Severe in clear air, occasional 7 = Severe in clear air, frequent 8 = Severe in cloud, occasional 9 = Severe in cloud, frequent X = Extreme Occasional = Occurs < 1/3 of the time BBB = Base of phenomena D = Extent of Phenomena from Base (in thousands of feet MSL)	
6TBBD	Icing Indicator(s) NOTE: May have multiple layers.	6 = Identifies group as an icing forecast T = Icing type 0 = Trace 1 = Light (mixed) 2 = Light in cloud (rime) 3 = Light in precip (clear) 4 = Moderate (mixed) 5 = Moderate in cloud (rime) 6 = Moderate in precip (clear) 7 = Severe (mixed) 8 = Severe in cloud (rime) 9 = Severe in precip (clear) BBB = Base of phenomena D = Extent of phenomena from base (in hundreds of feet MSL)	630005 indicates light icing in precipitation from the Surface to FL050 feet 670804 indicates severe mixed icing from FL080 to FL120 feet
QNHAAAAINS	Minimum Altimeter Setting	AAAA = Minimum altimeter setting during the next period (Period means from the start of that BECMG group to the start of the next BECMG group) NOTE 1: Altimeter setting forecasts are not used on TEMPO lines	QNH2992INS on a BECMG 1617 line, with the next forecast line BECMG 2223, means the lowest altimeter setting from 17 to 23Z is forecast to be > 29.92
Remarks	Plain	WND AFT = Wind will	WND 18005KT AFT

	Language Remarks NOTE: May have more than one remark.	change to 5 knots after the indicated time T##/##Z = High and low temperature forecast for the period of the forecast Note: M is used to indicate negative temperatures (i.e. TM09/21Z) AUTOMATED SENSOR METWATCH XXXX TIL XXXX	21 means the wind will be out of the south at 5 KT after 21Z T30/06Z T12/21Z means the high temperature is forecast to be 30oC at 06Z and the low is 12oC at 21Z During times of no mission flying and 52 OSS/OSW is closed, the system is placed into fully automated mode.
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Table A6.3. Weather Phenomena and Abbreviations.

WEATHER Drizzle: DZ Hail: GR Ice Pellets: PL Light Rain: -RA Moderate Rain: RA Heavy Rain: +RA Light Rainshowers: -SHRA Moderate Rainshowers: SHRA Heavy Rainshowers: +SHRA Rainshowers in the Vicinity: VCSHRA Thunderstorms/Severe Thunderstorms: TS Thunderstorms in the Vicinity: VCTS Fog (Mist): FG or BR Haze: HZ Smoke: FU Volcanic Ash: VA Snow: SN Funnel Cloud: FC Blowing Spray: BLPY	CLOUD TYPEs Cumulonimbus (Thunderstorm clouds): CB Towering Cumulus: TCU Moderate Cumulus: MDT CU CLOUD COVER AMOUNTS Clear: CLR or SKC Few (1/8 to 2/8 clouds): FEW Scattered (3/8 to 4/8 clouds): SCT Broken (5/8 to 7/8 clouds): BKN Overcast (8/8 clouds): OVC Vertical Visibility (8/8 obscured): VV
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Table A6.4. Miscellaneous Words and Phrase Abbreviations.

All Quadrants: ALQDS	Local observation: LOCAL
Altimeter Setting: ALSTG	Local Flying Area: LFA
Amendment: AMD	Low-level Wind Shear (Wind Shear Conditions): WSCONDS
Approach : APCH	Magnetic: MAG
Below: BLO	Maximum: MAX
Between Layers: BTL	Minimum: MIN
Between: BTN	Moderate: MDT
Clear Air Turbulence: CAT	North: N
Cloud Top: TOP	Occasional: OCNL
Continuous: CONS	Obscured: OBSCD
Correction: COR	Observation (Hourly or Routine): METAR
Crosswinds: XWNDS	On Top: OTP
Current: CURR	Outside Air Temperature: T
Dissipate: DSIPT	Over: OVR
During Climb: DURC	Overhead: OHD
During Descent: DURD	Pilot Report: PIREP
East: E	Pressure Altitude: PA
Embedded in a Layer: EMBD	Radar Report: RAREP
Enroute: ENRT	Ragged: RAG
Estimated: ESTMD	Routine Transmission Delayed: RTD
Extreme: EXTRM	Severe: SVR
Flight Level: FL	Slow: SLW
From: FM	South: S
Forecast: FCST	Special observation: SPECI
Frequency: FREQ	Spot Wind: SPOT
Frequent: FRQ	Stationary: STNRY
Gusting: GUSTG	Take Off: TKOF
Greater: GTR	Tower: TWR
Greater Than or Equal to: GTE	Turbulence: TURB
Heavy: HVY	Variable: VRB or VRBL
Icing: ICG	Very: VRY
Light: LGT	Visibility: VIS
Line: LN	Weather: WX
Lightning: LTG	Weather Advisory: WA
Lightning in Cloud: LTGIC	Weather Warning (or Weather Watch): WW
Lightning Cloud to Cloud: LTGCC	West: W
Lightning Cloud to Ground: LTGCG	Wind: WND
Lightning Cloud to Air: LTGCA	Within: W/IN
Lightning (all four types combined): LTGICCCGCA	

Attachment 7

52 FW TRAINING AREAS

A7.1. The following ranges, training areas, and tracks are determined by the daily flying schedule and incorporated into the MEF. When weather negatively impacts a planned training area, the MIF forecaster is prepared to highlight potential alternate areas that may be less affected by weather.

Figure A7.1. Ranges used by the 52FW operators.

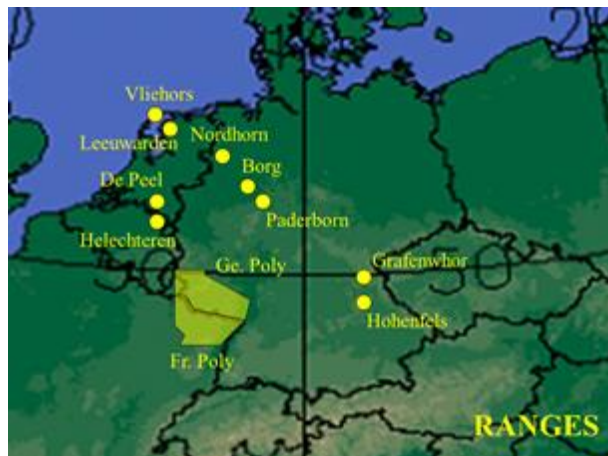


Figure A7.2. Training Reserved Areas (TRAs) used by the 52FW operators.

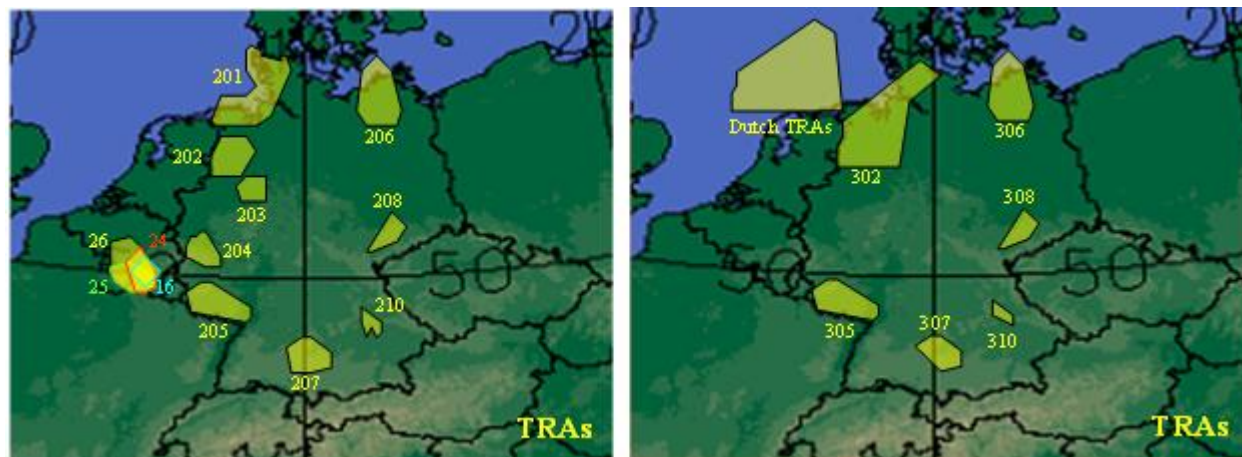
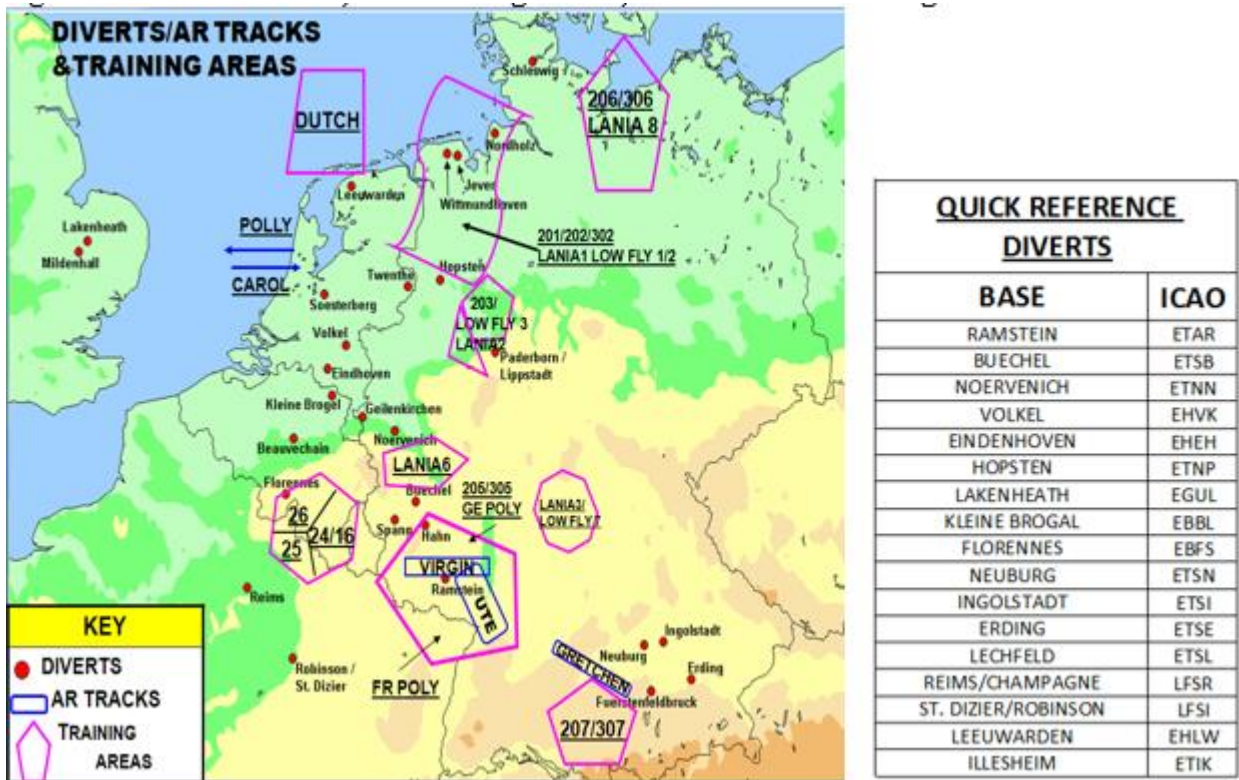



Figure A7.3. Divert bases, air refueling tracks, and alternate training areas.



Attachment 8

PLANNING FORECAST EXAMPLES

Figure A8.1. 21 OWS 5-day Forecast.

 21 OWS Five Day Forecast: SPANGDAHLEM











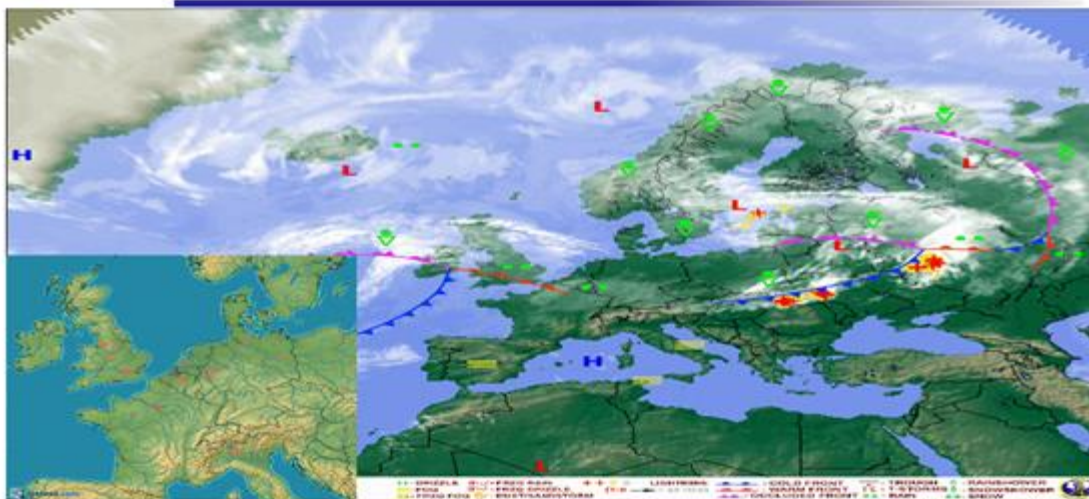
	Mon Jul 20	Tue Jul 21	Wed Jul 22	Thu Jul 23	Fri Jul 24
A.M.	 RAIN	 PARTLY CLOUDY	 PARTLY CLOUDY	 SUNNY	 PARTLY CLOUDY
Wind(KTS)	SW 9KT	SW 9KT	SW 9KT	NW 10KT	NE 9KT
P.M.	 PARTLY CLOUDY	 PARTLY CLOUDY	 PARTLY CLOUDY	 PARTLY CLOUDY	 PARTLY CLOUDY
Wind(KTS)	SW 15KT	NW 9KT	NW 9KT	NE 9KT	NE 9KT
High	27C / 80F	30C / 86F	29C / 84F	25C / 77F	25C / 77F
Low	16C / 60F	15C / 59F	16C / 60F	14C / 57F	13C / 55F
SR/SS(UTC)	0346/1933	0348/1931	0349/1930	0350/1929	0351/1928
MR/MS(UTC)	0828/2119	0930/2143	1030/2207	1132/2232	1234/2301
Lunar Illum	14.5%	21.8%	30.1%	39.1%	48.5%

Figure A8.2. 52 OSS/OSW 7day Forecast Slide 1 Regional Weather Analysis.



Regional Weather Analysis



Sabers—Seek, Attack, Destroy!

	Mon 20 Jul 15	Tue 21 Jul 15	Wed 22 Jul 15	Thu 23 Jul 15	Fri 24 Jul 15	Sat 25 Jul 15	Sun 26 Jul 15
FOCUSCAST							
TEMPS	LO: 61F/16C HI: 81F/27C	LO: 63F/17C HI: 82F/28C	LO: 59F/15C HI: 81F/27C	LO: 55F/13C HI: 70F/21C	LO: 48F/9C HI: 75F/24C	LO: 54F/12C HI: 66F/19C	LO: 43F/6C HI: 64F/18C
WINDS	9 KTS SW / 2500FT	10G18 KTS SW / 4000FT	10G18 KTS SW / 1000FT	10G18 KTS SW / 3000FT	10 KTS SW / NO CIG	10G20 KTS SW / 2000FT	10G20 KTS SW / NO CIG
SCUD/SKX CONDITIONS	RAIN	MIST	CLOUDY	CLOUDY	PARTLY CLOUDY	RAIN	RAIN
SOLAR /	BHMT : 0408 EENT : 2309	BHMT : 0410 EENT : 2307	BHMT : 0412 EENT : 2306	BHMT : 0414 EENT : 2304	BHMT : 0416 EENT : 2302	BHMT : 0418 EENT : 2300	BHMT : 0420 EENT : 2258
LUNAR	SR : 0546 SS : 2132	SR : 0548 SS : 2131	SR : 0549 SS : 2130	SR : 0550 SS : 2129	SR : 0551 SS : 2127	SR : 0553 SS : 2126	SR : 0554 SS : 2125
DATA	MR : 1028 MS : 2320	MR : 1129 MS : 2343	MR : 1230 MS : **	MR : 1332 MS : 0007	MR : 1434 MS : 0033	MR : 1536 MS : 0101	MR : 1639 MS : 0133
F-16 OPS	P	C	C	XW		V W XW	XW
PERSONNEL			P			P	
TIME	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00	00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00 06 12 18 00

XW – Crosswind W – Wind C – Ceiling P – Precipitation V – Visibility

Figure A8.4. Slide 3 Weather Thresholds and Legend



Wx Thresholds

WEATHER IMPACTS ON OPERATIONS			
OPERATION	FAVORABLE (No Degradation)	MARGINAL (Some Degradation)	UNFAVORABLE (Significant Degradation)
F-16 OPS	WIND ≤ 35 KTS	WIND 35 - 44 KTS	WIND ≥ 45 KTS
	CIG ≥ 2000 FT	CIG 301 - 2000 FT	CIG ≤ 300 FT
	VIS ≥ 3000 METERS	VIS 1600 - 4999 METERS	VIS ≤ 1600 METERS
	NO TSTMS	FEW - SCT TSTMS	SVR TSTMS
	XWIND ≤ 20 KTS		XWIND ≥ 20 KTS
PERSONNEL	NO PRECIP	LGT PRECIP	MDT (0.1-0.3) - Hvy PRECIP
(TEMP - HEAT AND/OR WINDCHILL INDICES)	TEMP ≥ 20 - 85 F	TEMP -15 - -20 F	TEMP ≤ -45 F
		TEMP 85 - 95 F	TEMP ≥ 95 F

X – Crosswind(XWIND) C – Ceilings(CIG) P – Precipitation(PRECIP)

V – Visibility(VIS) TS – Thunderstorms(TSTMS) T – Temperature(TEMP)

Precip Rate—Light: ≤ 0.1 in/hr, Moderate: 0.11-0.3 in/hr, Heavy: > 0.3 in/hr

Sabers—Seek, Attack, Destroy!